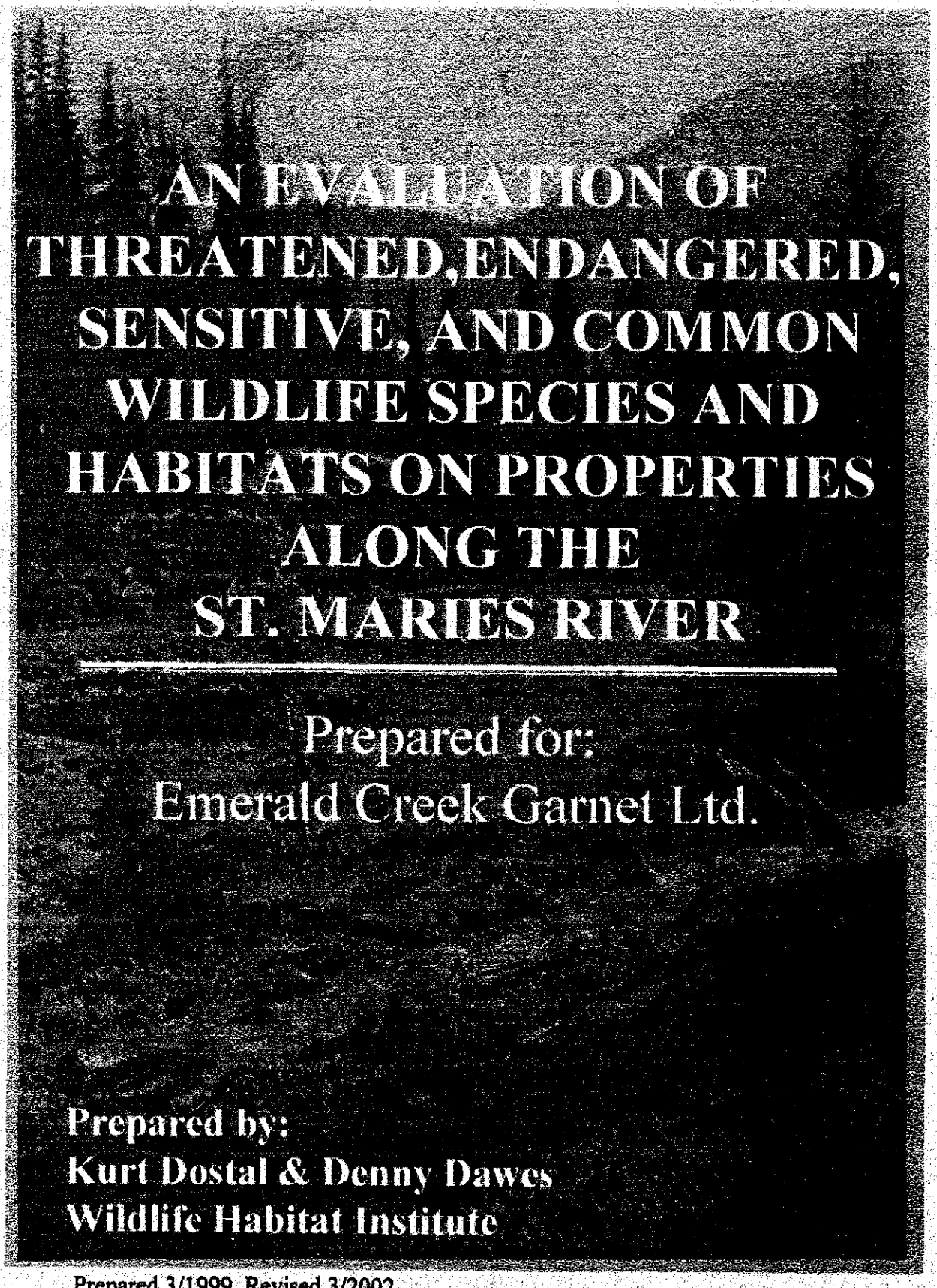
APPENDIX H
AN EVALUATION OF THREATENED, ENDANGERED, SENSITIVE, AND COMMON WILDLIFE SPECIES AND HABITATS ON PROPERTIES ALONG THE ST. MARIES RIVER



AN EVALUATION OF THREATENED, ENDANGERED, SENSITIVE, AND COMMON WILDLIFE SPECIES AND HABITATS ON PROPERTIES ALONG THE ST. MARIES RIVER

Prepared for:
Emerald Creek Garnet Ltd.

Prepared by:
Kurt Dostal & Denny Dawes
Wildlife Habitat Institute

Prepared 3/1999, Revised 3/2002

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Preface

Emerald Creek Garnet, LTD. (ECG) contracted with Wildlife Habitat Institute (WHI) in September of 1998 to assess Threatened and Endangered (T&E), Sensitive, and common wildlife species and habitats within a study area parallel and adjacent to the St. Maries River, south of Fernwood, Idaho (See Figures 1. and 2.).

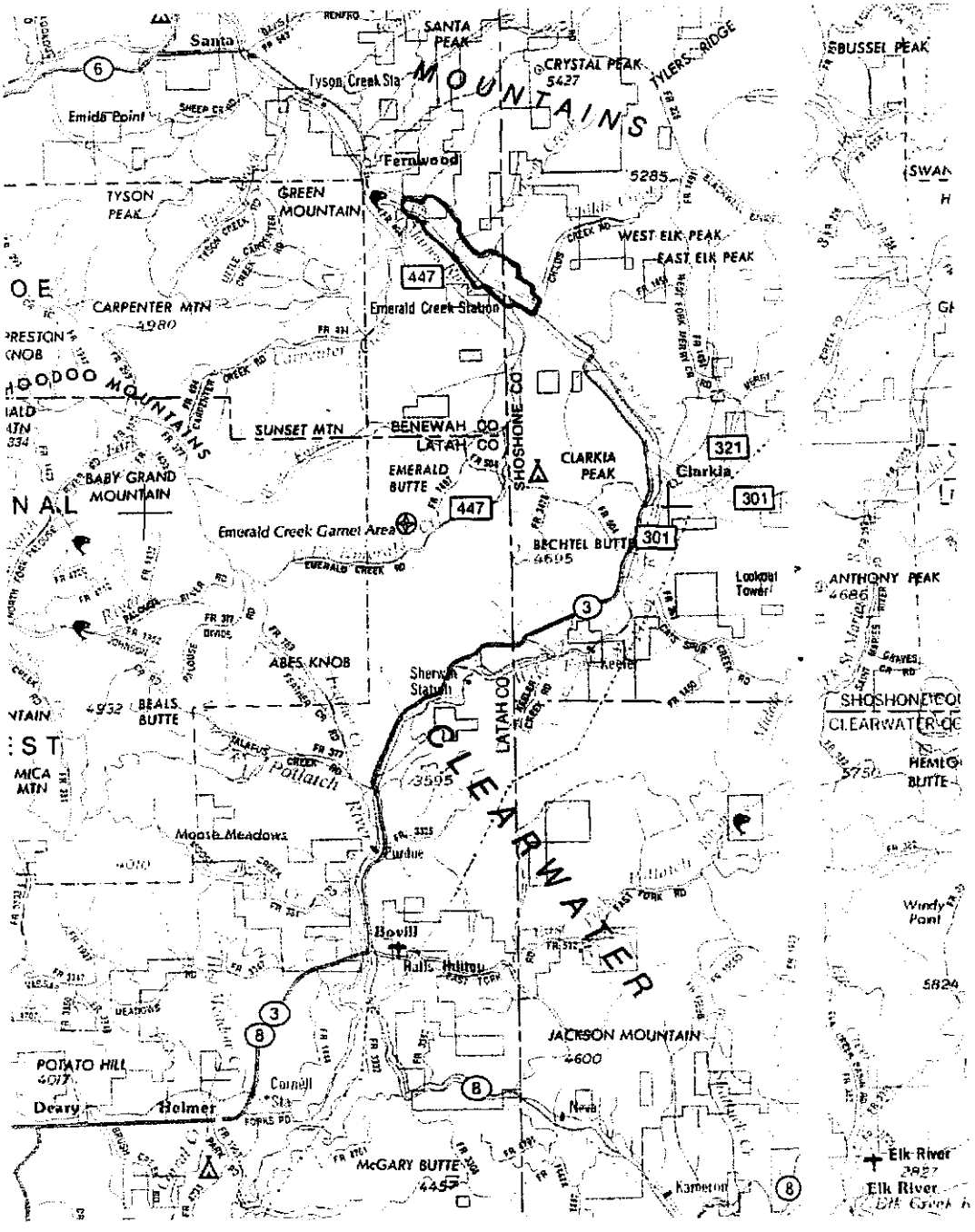
This report, with acreage revised in March 2002, is an evaluation of wildlife species and wildlife habitats present within or adjacent to the site. Evaluations were completed on affected environment, analysis of resource value, and proposed potential impacts, in relation to the mining process. A section proposing mitigation of impacts concludes this report.

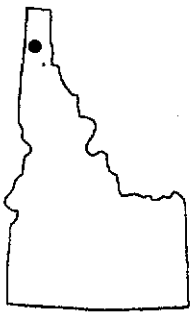
The study area encompasses an area of approximately 355.8 acres lying parallel and adjacent to the St. Maries River south of Fernwood, Idaho. It is comprised of multiple land-ownership. Land description is alluvial flood plain, lying from toe slope to toe slope within a valley of the St. Maries River.

ECG provided maps of the proposed mining sites. ECG also provided a description of the expected mining techniques to be used in these areas. The following evaluation was based on those descriptions.

Wildlife Habitat Institute provided a similar evaluation for ECG on proposed mining sites within Emerald Creek and Carpenter Creek, tributaries of the St. Maries River, in 1993.

The study area includes several locations in Township 43 North, Range 1 East, Sections 5,8,9,15, and 16, within Benewah, Latah, and Shoshone Counties, Idaho. It lies parallel to Idaho Highway 3, between Clarkia and Fernwood, Idaho. The site is divided by the highway, which bisects it from SE to NW (Figure 1.and 2.).



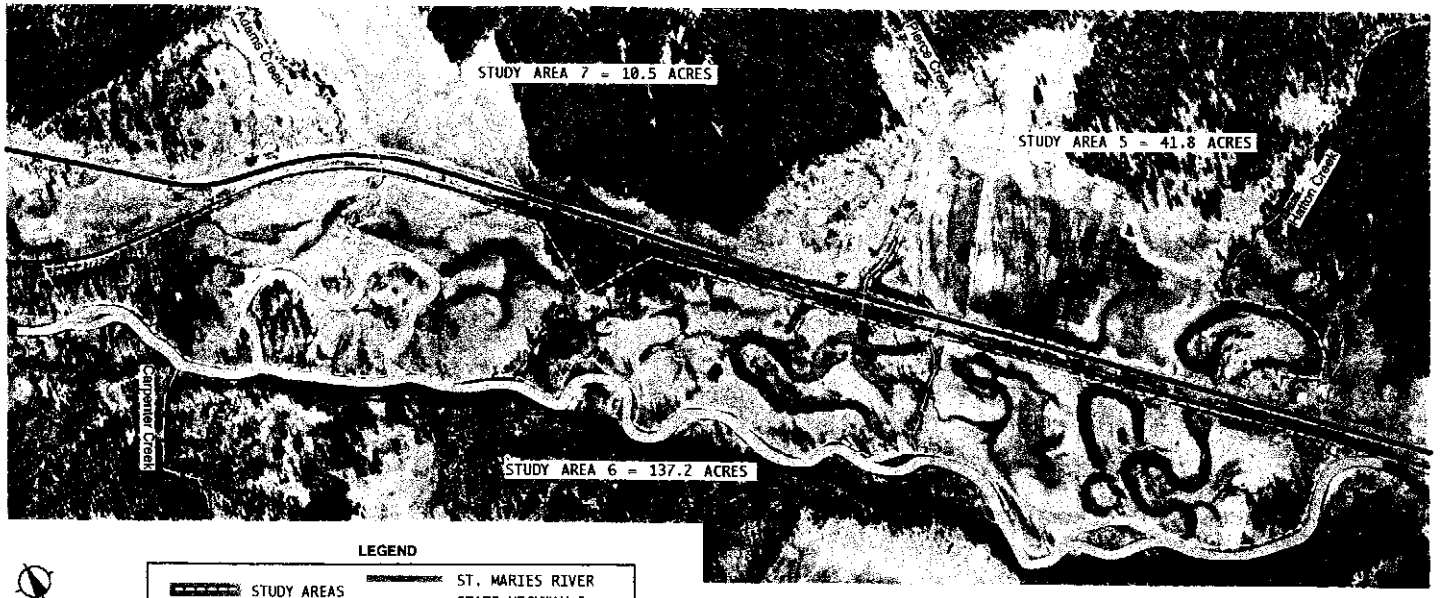


N

ST. MARIES RIVER EIS VICINITY MAP

EMERALD CREEK GARNET, LTD

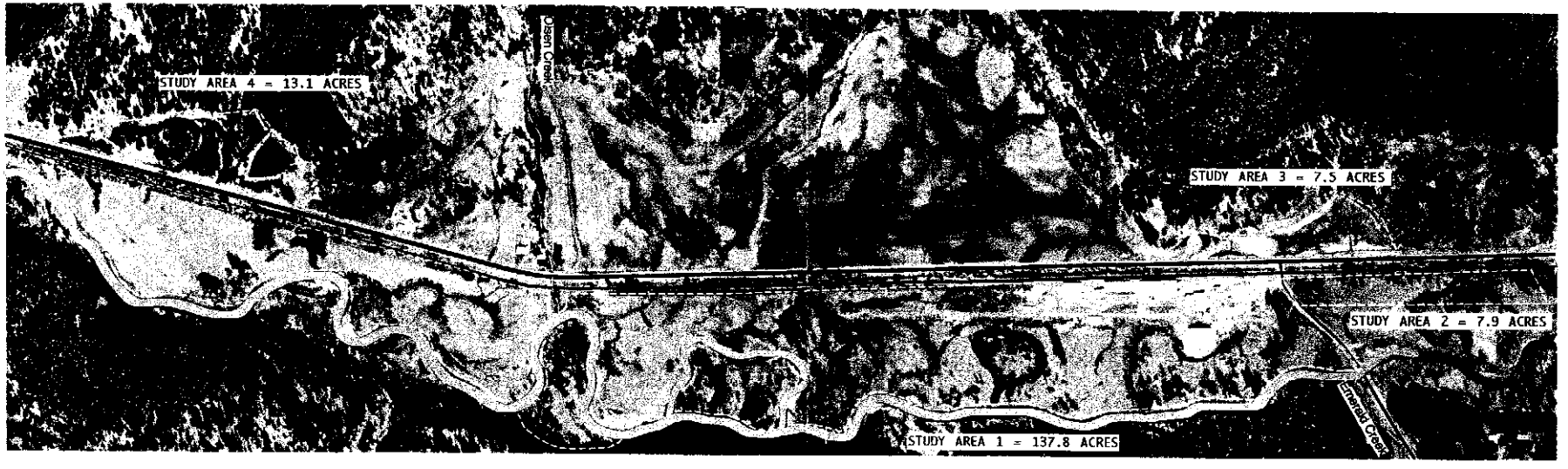
FERNWOOD, IDAHO



LEGEND

STUDY AREAS
STREAMS
ST. MARIES RIVER
STATE HIGHWAY 3
ST. MARIES RAILROAD

SCALE: 1 inch = 700 feet



TOTAL STUDY AREA EXTENT = 345.8 ACRES

FIGURE 2:
PROJECT AREA
ST. MARIES RIVER STUDY AREAS
EMERALD CREEK GARNET LTD

Methodology

Wildlife and wildlife habitat assessment included an evaluation of aerial photographs, interviews with knowledgeable USFWS and IDF&G biologists, academic biologists, and members of the interdisciplinary consultant team. Additional information was collected from Idaho Conservation Data Center (CDC), USFWS, and IDF&G. A literature search for applicable habit and habitat data was conducted utilizing the University of Idaho library system. All data used in this evaluation were the most current available in 1998. Two trips for a total of 14 hours were made to the study area to visually assess habitats, observe wildlife habitat use, and conduct systematic surveys of the area for wildlife presence and sign.

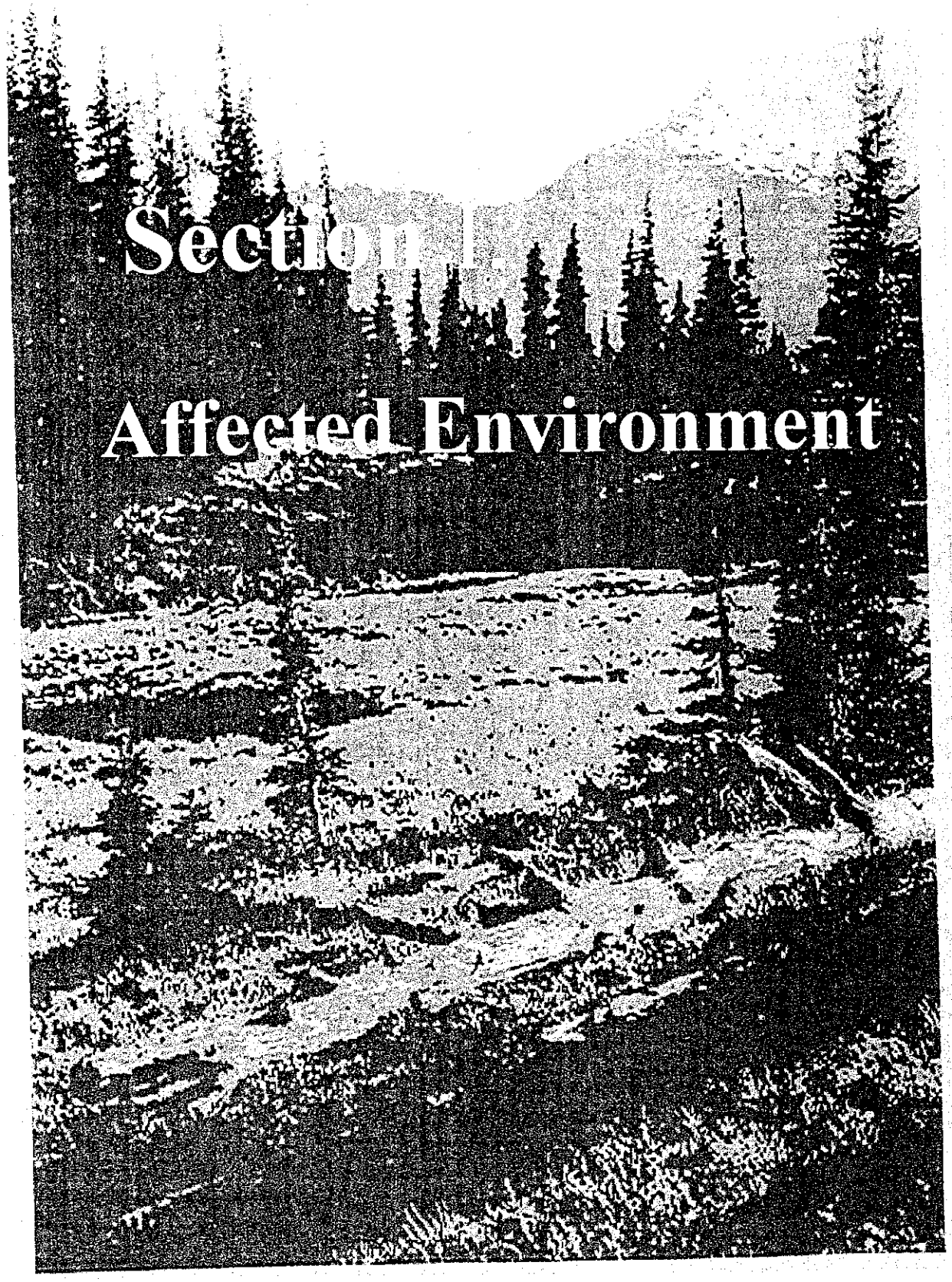
Field data collected by WHI took 3 forms:

1). Wildlife Observation. Field trips into the study area were planned to occur during low-light conditions of dawn and dusk as well as during the full daylight hours. Wildlife activities are generally enhanced during low-light conditions of dawn and dusk. Every opportunity was taken to be in position to observe wildlife at these times. Wildlife species directly observed were identified and recorded by species and habitat type location. Identification and observance were assisted with the aid of 7x21 binoculars.

2). Habitat Evaluation and Confirmation. Five general habitat types were named to describe habitats available within the study area: 1) Dry Meadow, 2) Wet Meadow, 3) Pond/Marsh, 4) Deciduous Shrub/Cottonwood, 5) Mature Cottonwood, and 6) Coniferous Forest. Complete habitat descriptions are included in section 1.3.2. These habitats were first delineated from aerial photographs in order to estimate extent of coverage for each type. Coverage estimates and habitat types were then confirmed by visual assessment during field trips.

3). Search for Tracks, Droppings, and Sign. An observer walked the study areas looking for sign of all wildlife utilizing the area. All habitat types delineated in the study area were covered. Pond/marsh and deciduous shrub habitats were given emphasis due to increased wildlife use relative to the other habitat types. Tracks, droppings, and sign including nests, burrows, and foraging evidence were recorded for species of origin and habitat type location.

The forested perimeters were also investigated, primarily for sign of raptor and owl nests or feeding perches. This was carried out by contouring the side-slope within a sight distance of the meadow opening. Sign searched for included whitewash, prey remains, molted feathers, or cast pellets. At the boundary of the project site, the observer moved upslope approximately one sight distance, then repeated the search in the opposite direction (Kennedy and Stahlecker, 1991).



Section 3

Affected Environment

SECTION I. AFFECTED ENVIRONMENT

1.1 Background Information

The CDC documents known sightings of Threatened and Endangered (T&E) Species throughout the state. Reports of known sightings are also available from the U.S. Fish and Wildlife Service, Spokane, regional office. Reports were requested and received from both of these offices (Appendix A). Area of concern for sighting includes township, section, and adjoining sections for most species. Radius of concern for some species is greater depending on their sensitivity to disturbance. A listing of species based on county of occurrence was also utilized to establish a list of T&E and Sensitive Species possibly occurring in the area (CDC, 1998). See Table 1.3.

The U S Fish and Wildlife Service currently utilizes 7 distinct designations for sensitive wildlife species (CDC 1998).

- Listed Endangered (LE). Taxa in danger of Extinction throughout all or a significant portion of their range.
- Listed Threatened (LT). Taxa likely to be classified as Endangered within the foreseeable future throughout all or a significant portion of their range.
- Listed Endangered/Experimental Nonessential(LE/XN)
- Proposed Endangered (PE). Taxa proposed to be listed as endangered (formal rulemaking in progress).
- Proposed Threatened (PT). Taxa proposed to be listed as Threatened (formal rulemaking in progress).
- Candidate (C) Species. Taxa for which the USFWS has on file sufficient information on biological vulnerability and threats to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded.
- Species of Concern (SC). Available information supports tracking the status and threats to species because of one or more of the following factors.
  - **A.** Negative population trends have been documented.
  - **B.** Habitat is declining or threats to the habitat are known.
  - **C.** Sub-populations or closely related taxa have been documented to be declining.
  - **D.** Habitats for life phases outside of Idaho (i.e., migratory habitat) are known to be threatened.
  - **E.** Competition or genetic implications from introduction/stocking of exotic species.
  - **F.** Identified as a species of concern by agencies or professional societies.
  - **G.** In combination with any other criteria, information is needed on status or threats
- Watch (W) Species.
  - **A.** Species that are stable but with Idaho populations that are on the periphery of the range.
  - **B.** Idaho population is disjunct but appears stable.
  - **C.** Unique habitat, or the species is indicator of a specific habitat type.
  - **D.** The status of the species is poorly understood.

The Idaho Department of Fish and Game maintains a listing of three categories of concern to sensitive species (CDC, 1998).

- Endangered (E). Any species in danger of extinction throughout all or a significant portion of its Idaho range.
- Threatened (T). Any species likely to be classified as endangered within the foreseeable future throughout all or a significant portion of its Idaho range.
- Species of Special Concern (SC). Native species which are either low in numbers, limited in distribution, or have suffered significant habitat losses. The list includes three categories:

  A. Priority Species – species which meet one or more of the criteria above AND for which Idaho presently contains or formerly constituted a significant portion of their range;

  B. Peripheral Species – species which meet one or more of the criteria above but whose populations in Idaho presently are on the edge of a breeding range that falls largely outside the state; and

  C. Undetermined Status Species – species that might be rare in the state but for which there is little information on their population status, distribution, and/or habitat requirements.

1.2 Threatened and Endangered Wildlife Species

1.2.1 Gray Wolf

The U.S. Fish and Wildlife Service provided a species list indicating one endangered species, the gray wolf *(Canis lupus),* being sighted within the radius of concern of 6 miles of the study area. Radius-of-concern is established by the U.S. Fish and Wildlife Service for each species.

In the state of Idaho, the gray wolf is considered a Non-Essential, Experimental Population south of Interstate Highway 90 (USDI, 1994). LE/XN status allows more flexibility in managing these populations, including removing or destroying animals causing damage to livestock or property. The study area is located entirely south of Interstate 90. The study area does not occur within the Central Idaho Wolf Recovery Area, nor within any of the several travel corridors identified by the Northern Rocky Mountain Wolf Recovery Plan (USDI, 1987). Reports by the USFWS indicate that there have been confirmed sighting(s) of gray wolf within 6 miles of the study area.

At one time occupying most of North America, gray wolves are now limited to Alaska, Canada, and less populated locations of the contiguous 48 states. Recovery efforts in Idaho started with the release of 35 wolves in north central Idaho in 19955 and 96. Estimated populations in December 1997 were approximately 80 animals (USDI 1998).

The gray wolf is the largest member of the family *Canidae* to inhabit North America. Wolves measure 55-70 inches from nose-to-tail, stand 26-28 inches high at the shoulder, and weigh from 70-120 pounds. Colors are most often gray, but may vary from nearly white to nearly black. Wolves live primarily in extended family groups referred to as packs.

Wolf occurrence in or adjacent to the study area prior to European settlement was likely common. By 1930, wolf populations were virtually extirpated from the western United States (USFWS, 1987). This was due to decreased prey abundance and efforts to exterminate large predators to reduce conflicts with domestic livestock.

Habitat Requirements

Home ranges for wolves may be up to 100 sq. miles (Mech, 1970), crossing a number of habitat types. Hanson (1986) reported that habitat use depends mainly upon the abundance of prey species and the degree of potential conflict with human interests and activities. Ungulates including deer *(Odocoileus spp.),* elk *(Cervus spp.),* and moose *(Alces alces)* make up primary species hunted by wolves. Alternate prey species may consist of beaver *(Castor canadensis),* snowshoe hare *(Lepus americanus),* grouse *(Phasianidae family),* porcupine *(Erethizon dorsatum),* and others. The Northern Rocky Mountain Wolf Recovery Plan (1987) reported wolf habitat can best be evaluated on the basis of three key habitat components:

- annual prey base of ungulates and alternate prey,
- isolation from human disturbance,
- suitable and secluded den and rendezvous sites.

Wolf activity is usually confined to denning and rendezvous sites during spring and summer while pups are being raised (Hansen, 1986). Large areas of isolation are required to assure minimal human disturbance. Disturbance can include timber harvest activities, mining activities, high road densities, road use, camping and hunting, cattle grazing, and human habitation. Thiel (1985) reported as road densities exceeded 0.94 miles of road per square mile of habitat, wolf populations declined from breeding to non-breeding status and eventually the use of the area by wolves was eliminated. Within each quadrangular section containing a study area, road density is greater than 2.0 miles of open road per square mile. Most of these roads are open to the public, and all of the proposed mining project areas are within 0.5 miles of an open road. These factors would likely prevent wolves from utilizing the study area as part of a home range.

1.3 Threatened, Endangered, and Sensitive Species with Potential to Occur Within or Near the Study Area.

1.3.1 Background Information

The CDC documents known sightings of T&E and Sensitive species throughout the state of Idaho. They also provide a list of species by county-of-occurrence. Species in this section have do documentation of occurrence within the study area, or is the study area within the radius-of-concern for any individual sightings. Species included in this report are listed in table 1.3.

The study area and adjacent areas were evaluated for habitat suitability, and sign of presence or use of the species listed in this section.

Table 1.3. Threatened and Endangered species with potential to occur within or adjacent to study area.

Common Name	*Scientific Name*	Federal	State	USFS	BLM
Gray Wolf	*Canis lupus*	LE/XN			
Grizzly Bear	*Ursus arctos*	LT	T		
Bald Eagle	*Haliaeetus leucocephalus*	LT	E		
Lynx	*Lynx canadensis*	PT	GSC	S	S
Wolverine	*Gulo gulo luscus*	W	SC	S	S
Fisher	*Martes pennanti*	W	SC	S	S
Northern Goshawk	*Accipiter gentilis*	W	SC	S	S
Northern Pygmy Owl	*Otus flammeolus*	W	SC	S	S
Boreal Owl	*Aegolius funereus*	W	SC	S	S
Flammulated Owl	*Otus flammeolus*	W	SC	S	S
Upland Sandpiper	*Bartramia longicauda*	W	SC		S
Harlequin Duck	*Histrionicus histrionicus*	W	GSC	S	S
Long-Eared Myotis	*Myotis evotis*	W			S
Yuma Myotis	*Myotis yumanensis*	W			S
Northern Alligator Lizard	*Elgaria coerulea*	W			
Coeur d'Alene Salamander	*Plethodon idahoensis*	W	SC	S	S

T – Threatened
E - Endangered
LE/XN - Listed Endangered/Non-Essential Experimental
LT - Listed Threatened
SC - Species of Special Concern
S - Sensitive Species
W - Watch Species
G - Game Species
PT - Proposed Threatened

1.3.2 Grizzly Bear

Grizzly bears are federally and state listed as Threatened in the general vicinity of Shoshone County. The Conservation Data Center (1998) has no reported sightings within a 6-mile radius-of-concern of the study area. The project area does not occur within established Grizzly Bear Recovery Zones.

Historically grizzly bears ranged from Alaska to Mexico, and from the Pacific Ocean east to the central plains (Serveen, 1990). Through habitat loss and predator control, grizzly bears were nearly extirpated in the lower 48 states except for remnant populations in remote locations. Grizzly bears are the largest bears that inhabit North America. Grizzlies can be distinguished from other bears by a dish-faced profile, compared to the straight profile of the black bear (*Ursus americanus)*, and a noticeable hump above the shoulders. They are also much larger than the more abundant black bear, standing 3-3 ½ feet at the shoulder, with a total body length of 5-8 feet.

Habitat Requirements

Grizzly bears occupy a broad variety of habitats including, but not limited to, climax coniferous forests, alpine areas, open meadows, and riparian systems. Generally, grizzly bears prefer secluded areas of road densities less than 1 mile per square mile of habitat. Home ranges can cover more than 200-300 square miles. As settlement and activities such as logging pushed further into remote regions, suitable habitats were reduced. Grizzly bears are omnivores, utilizing many different foods including carrion, grasses, forbs, mast, insects, and fish. They occasionally kill prey species. Habitats usually change as food supplies change over the seasons.

The study area is in close proximity to human habitation and activities. Road densities exceed 1 mile per square mile within and around the study area. For these reasons, it is unlikely that the area would be suitable for grizzly bear habitat.

1.3.3 Bald Eagle

The bald eagle is federally listed as Listed Threatened, and listed by the state of Idaho as Endangered in Benewah and Shoshone Counties. Nesting and roosting locations are of concern rather than sightings of individuals. The Conservation Data Center (1998) has no reported nest locations within a 2-mile radius-of-concern of the study area.

The second largest bird in North America, the bald eagle is the national bird of the United States, and likely one of the most recognizable. Their white heads, large yellow bill, and white tail coverts easily distinguish adult bald eagles. Length averages 31-37 inches, and wingspan 70-90 inches. Juveniles and sub-adults may be confused with golden eagles (*Aquila chrysaetos)* as full adult coloration does not occur until age 4-5. Juveniles and sub-adults are mostly brownish with whitish mottling on most of body, under-wings, and tail coverts.

Habitat Requirements

Range of the bald eagle covers Alaska, most of Canada, much of the western states and the eastern coast. They are highly associated with large bodies of water and river systems. This association is diet related, dominated by fish. Waterfowl is also an important part of the bald eagles' diet, along with carrion and small mammals. Bald eagles are migratory, and typically congregate along rivers and large water bodies, which provide abundant food sources. Roost sites are another important habitat feature, most often consisting of large, old growth trees situated near foraging sites (Johnsgard, 1990).

Snow (1973) summarized several elements of preference to be consistently present for bald eagle nest site selection. These elements include:

- A clear flight path to a close point on a beach or river.
- The largest tree in a stand is usually chosen, and an open view of the surrounding area is an associated characteristic.
- Proximity to water is probably a normal requirement, because of the usual dependency on fish for food, and most nest trees are less than one kilometer from water.
- Freedom from human disturbance.

Nests are most commonly constructed in crowns of trees which are live, bushy, broken, and deformed (Hodges and Robards, 1982). In the absence of suitable nesting trees, nests may be built on rocky cliffs or on the ground. Platform style nests are constructed of twigs and branches. The same pair often reuses nests in successive years (Degraaf et al, 1991).

The female lays 2-3 eggs, 2-4 days apart, in March or April, and both parents incubate. Incubation takes 40-50 days. The young hatch asynchronously, with the youngest often dying. The young remain in the nest for 10-12 weeks, and are often cared for by the parents until early fall (Herrick, 1934). Both parents hunt to provide food.

In northern Idaho, confirmed nests exist near large lakes/river systems such as the Coeur d'Alene chain, Priest Lake, Lake Pend Orielle, and the St. Joe and Kootenai Rivers.

No winter roost sites or nesting territories are known within the study area. Lack of fish and carrion sources are likely limiting factors in permanent residence of bald eagles in this area. Any sightings occurring within the area are likely migrants.

1.3.4 *Lynx*

Lynx are federally listed as Proposed Threatened, listed in Idaho as Species of Special Concern, and as a Sensitive Species by the Forest Service and the BLM in Benewah and Shoshone Counties. The CDC (1998) has no reported sightings within 1 mile of the study

area. The decision by the USFWS to list or not list lynx as threatened will be made by July 8, 1999

Range of the lynx includes Alaska, Canada, the northernmost-forested portions of the lower 48, extending down through the Rocky and Cascade Mountains. Lynx are roughly 30-36 inches in length, and are distinguished from bobcats (*Lynx rufus)* by a short, black-tipped tail, and pronounced ear tufts. They weigh from 15-30 pounds. Large feet enable lynx to navigate deep snows.

Habitat Requirements

Lynx are wide-ranging predators, with home ranges averaging 5-20 square miles (Nellis, 1989). Habitats are commonly at altitudes above 4500 feet and occur in association with snowshoe hares (*Lepus americanus).* Lynx rely on the snowshoe hare as their primary food source (Koehler, 1990). Because of this close predator-prey relationship, it is assumed that good snowshoe hare habitat is good lynx habitat (Rodrick and Milner, 1991). Snowshoe hare prefer early successional forested habitats that provide dense stands of hardwood and coniferous saplings that provide winter feed and cover. Lynx breeding and denning habitats consist of mature forest with large numbers of down logs. Openings such as large meadows and clear-cuts are avoided.

Suitable habitats do not exist for lynx within the study area. While adjacent areas may provide habitats for a useable home range, the study area is comprised mainly of open meadow with smaller amounts of shrub habitat. It is unlikely that the study area would see use from even a transient individual.

1.3.5 Wolverine

The wolverine is Federally listed as a Watch species, species of Special Concern by the state of Idaho, and a Sensitive species by both USFS and BLM in Shoshone County. The CDC (1998) has no reported wolverine sightings within 6 miles of the study area.

The geographic range is circumboreal, in mountainous conifer habitats. In North America, wolverines occupy most of Canada, and extend south into the United States following the western mountain ranges. The largest of the weasel family, the wolverine averages 30 inches nose to tail, and weighs 35-60 pounds. Its fur is a dark brownish with a broad yellowish stripe starting at each shoulder and meeting at the base of the tail. Large feet aid in maneuvering through of deep snow.

Habitat Requirements

Preferred habitats include mature forest areas with natural openings consisting of cliffs, slides, blow-down areas, meadows, and basins, especially the ecotones between these areas. Copeland (1992) reported that aerial tracking locations have shown no vegetative habitat preferences. Habitats are high elevation in spring and summer, intermediate in fall,

and lower elevation in winter. Wolverines are opportunistic feeders and, as stated earlier, rely heavily on carrion. They are, however, very effective predators and will prey on a number of small birds and mammals (Hash, 1987).

The wolverine travels constantly in search of it's primary food source, ungulate carrion (Copeland, 1992). In order to find enough food, home range size can be very large. Wilson (1982) reported home ranges of up to and over 750 square miles. Wolverines, like wolves and grizzly bear, are highly sensitive to human disturbance, generally occupying back country or wilderness areas with little human activity or development. Wilson (1982) described the most important component of wolverine habitat was likely isolation from human disturbance.

Wolverine habitat within the study area is considered low quality due to human habitation and activities, and high road densities. Large home ranges and travel patterns may bring the chance of an animal moving through the study area, but it is unlikely an animal would persist in the immediate area.

1.3.6 Fisher

Fishers are federally listed as Watch Species, Species of Special Concern by the state of Idaho, and as Sensitive Species by the Forest Service and the BLM in Benewah and Shoshone counties. The CDC (1998) has no reported sightings within 1 mile of the study area.

Historically, fishers ranged throughout Canada to the northern United States, extending south along western mountain ranges. By the 1920's, the population of fishers in Idaho had declined to low levels, likely caused by over harvest and reduction of suitable habitat due to fire and logging. A furbearer survey conducted by the IDF&G from 1953-1958 failed to find any evidence that fishers existed in the state at that time. The IDF&G began a restocking program in the early 1960's.

Fishers are members of the *Mustelidae* family, and are a smaller version of the wolverine. Average body length of the fisher is 20-25 inches with a tail 13-15 inches. They range from medium brown to nearly black, with white tipped hairs that give it a frosted appearance.

Habitat Requirements

Jones (1991) reported that fishers primarily inhabit mature and old growth coniferous forests during summer, depending on large patch size, and avoid areas such as openings or clear-cuts. Forest type preferences in winter ranged from young to mature, with closed canopy. Large snags and down logs are also an important habitat component, providing denning and foraging sites, being especially important foraging habitat in winter. Riparian areas within mature forests are utilized extensively for foraging and travel corridors (Jones, 1991) with 75% of all fisher sightings during the study occurring within 100m of

water. Home range size of fishers averages 12 square miles for male and 6 square miles for females.

Fishers feed on many small mammals including snowshoe hares, tree squirrels, northern flying squirrels (*Glaucomys sabrinus),* voles (*Clethrionomys spp.)*, and porcupines. Although excellent hunters, fishers are also opportunists, and at times feed heavily on carrion, insects, and fruits.

The areas adjacent to the study area may provide fishers with adequate habitat. The study area, however, consists mainly of open meadow area typically avoided by fishers. For this reason it seems unlikely that fisher would utilize the study area as part of its home range.

1.3.7 Goshawk

Goshawks are federally listed as Watch Species, Species of Special Concern by the state of Idaho, and Sensitive Species by the Forest Service and the BLM in Latah and Shoshone counties. The CDC (1998) has no reported nest sightings within 1 mile of the study area.

Goshawks occur throughout the northern coniferous and mixed hardwood forested zones of North America. They are residents of Idaho throughout the year. Goshawks are the largest North American accipiters, averaging 21-26 inches in length, with a wingspan of 40-46inches. The males are blue-gray above, and whitish below with heavy gray barring. Females are usually slightly browner above, and more coarsely marked with dark gray below.

Habitat Requirements

The goshawk is a forest dwelling hawk, utilizing a variety of forest ages, structural conditions, and successional stages (Reynolds et al, 1991). Goshawks show a preference for mature to over-mature forest stands with relatively open understory and scattered openings.

Goshawks occupy large home ranges, typically around 5,000 acres. Three important components are commonly identified within a goshawk's home range: nest area, post-fledgling family area, and foraging area (Reynolds et al, 1991).

Nest area

Goshawks aggressively defend a 25-30 acre nest area that may include one or more nests. Nesting habitat varies largely due to changes in available habitat. Hayward (1989) reported that nest sites occupied predominantly even-aged stands in one research area, and multi-storied stands in another. There were, however, several uniform nest site characteristics. Typically, nests occupied older, mature to over-mature coniferous forests with a closed canopy of 75% to 85% cover. Nests were usually located on a moderate slope of 15-35%, at or near the bottom of a hill, and occupying a northern aspect. Nest trees were also relatively large averaging over 19 inches diameter at breast height (DBH).

Nests are constructed of twigs and small branches against the bole of the tree, generally from 30-70 feet in height.

Post-fledgling family area

After goshawk young fledge in late July and early August, they remain in the immediate area for 50-60 days and are fed by the adults. The post-fledgling areas are approximately 400 acres, provide cover from predators, and provide sufficient prey for the young to develop hunting skills (Reynolds, et al 1991).

Foraging area

Components of the foraging area used by goshawks include:

1) large trees that provide hunting perches and open understory that provides opportunity for detection and capture of prey;
2) scattered openings (>4 acres) which improve the habitat and thus the availability of prey species;
3) forests in older age classes which are relatively open, have a well-developed shrubby understory along with groundcover and snags that provide habitat for goshawk prey.

Goshawk prey includes small to medium sized birds and mammals such as jays, woodpeckers, grouse, squirrels, chipmunks, and snowshoe hares. Goshawks hunt within timber stands which are open enough to permit flight (Warren, 1990), as well as forest openings and edges (Kenward, 1982). Reptiles and insects can also make up a considerable portion of the goshawks diet (Johnsgard, 1990).

No recorded goshawk or goshawk nest sightings have been reported within the study area, however it is possible the study area is within a goshawk home range.

1.3.8 Boreal Owl

Boreal owls are federally listed as Watch Species, listed by the state of Idaho as Species of Special Concern, and as Sensitive Species by the Forest Service and the BLM in Shoshone County. The CDC (1998) has no reported sightings within 1 mile of the study area.

A small forest owl, the boreal owl averages 10 inches in length. Upper parts are a chocolate brown with whitish streaking on the wings and tail, and heavily spotted with white on the head. A whitish facial disk is distinctly bordered. Under parts are light colored with dark brown streaks.

Boreal owls are found circumpolar. In North America these owls range from tree-line in central Alaska, east to the Atlantic Ocean, south to the northern edges of the United States. It also occurs in mountainous areas of Washington, Idaho, Montana, Wyoming, and Colorado. Wintering areas are typically common to breeding areas but also extend south into the Great Plains to the Midwest, and New England areas in the east.

Habitat Requirements

In Idaho, boreal owls are highly associated with spruce/subalpine fir and lodgepole pine (*Pinus contorta*) habitat type. These associations are typically above 5,000 feet in elevation (Hayward, 1989). Boreal owls are secondary cavity nesters, utilizing natural cavities or cavities excavated and abandoned by pileated woodpeckers. Bull (1980) reported that as cavities become limited as a result of pileated woodpeckers not establishing nests at these higher elevations, boreal owls will nest at elevations lower than 5,000 feet.

Foraging habitat tends to occur in pole or larger size trees, interspersed with small openings that support populations of small mammals. Boreal owls are nocturnal hunters that prey predominantly on voles and other small mammals.

The study area does not provide habitats suitable for boreal owls. No recorded sightings have been reported within the study area. Habitats capable of supporting boreal owl populations likely occur at higher elevations surrounding the study area.

1.3.9 Flammulated Owl

The flammulated owl is federally listed as a Watch Species, listed by the state of Idaho as a Species of Special Concern, and the Forest Service and BLM as a Sensitive Species in Shoshone County. The CDC (1998) has no reported sightings within 1 mile of the study area.

Flammulated owls are small, forest dwelling owls averaging 6-7 inches in length. Colors are drab, predominantly gray tone and brown mix. Brown eyes distinguish it from other small owls. Ear tufts are much smaller than in similar screech owls (*Otus kennicottii).*

Flammulated owls range from southern British Columbia through north central Washington, eastern Oregon, Idaho, western Montana, northern Colorado, and south through portions of the southwestern states. They are migratory, wintering from Mexico and southern California south to Guatemala and El Salvador.

Habitat Requirements

Preferred habitats are mainly ponderosa pine forest above 3,000 feet elevation over much of its range. They will also utilize Douglas fir (*Pseudotsuga menziesii*) and Grand fir (*Abies grandis*) forest types. Old growth stands are preferred for nesting and foraging. Flammulated Owls are secondary cavity nesters and select cavities excavated and abandoned by woodpeckers. Nest locations are typically 7-40 feet above the ground in live or dead trees with average DBH of 12 inches (Thomas et al, 1979).

Prey consists mainly of insects such as moths, beetles, grasshoppers, and crickets. Flammulated owls are nocturnal, and all foraging is conducted at night. Hunting methods include capturing insects in flight, from foliage, and on the ground.

Due to lack of preferred habitats of old growth ponderosa pine, Douglas fir, or grand fir forest types, it is unlikely that flammulated owl occur within the study area.

1.3.10 Upland Sandpiper

The upland sandpiper is federally listed as a Watch Species, listed by the state of Idaho as a Species of Special Concern, and by the BLM as a Sensitive Species in Shoshone County. The CDC (1998) has no reported sightings within or near the study area.

Upland sandpipers are typical of many wading birds with relatively long legs, slender bodies, and long necks. They average 12 inches in length, with 4-5 inches legs. Upper parts are mottled browns with a darker background. Lower parts are buff, with spots starting on lower breast and graduating to nearly stripes at top of neck. Legs are yellow.

The range of the upland sandpiper within North America is limited to breeding range. In winter they migrate to South America. Breeding range extends from central Alaska, east through central Canada and the Great Lakes region to southern New Brunswick, and south into eastern Washington, northeastern Oregon, Idaho, Colorado, northwestern Oklahoma, Texas, and parts of the Midwest and mid-Atlantic states (Groves et al, 1997).

Habitat Requirements

Typical habitats include grasslands, dry meadows, pastures, plowed fields, and scattered woodlands at timberline. In Idaho they prefer dry grass prairies and are not associated with wet areas or shores (Groves et al, 1997).

Foraging takes place on the ground, usually where grasses are low and open enough to provide good visibility. Foods consist of grasshoppers, crickets, ants, berries, waste grain, and grass and weed seeds.

Nests are built in depressions on the ground in loosely spaced colonies. 2-4 eggs are laid in May or June, and incubated by both sexes. Both parents tend the young. Flight occurs 30-31 days after hatching.

Meadows within the study area may be suitable upland sandpiper foraging, although no sightings have been recorded in this area. It is likely that wet, spring conditions and relatively limited dry meadow occurrence on a landscape scale may limit the suitability of the study area as upland sandpiper nesting habitat.

1.3.11 Harlequin Duck

Harlequin ducks are federally listed as a Watch Species, listed by the state of Idaho as a Species of Special Concern, and the Forest Service and BLM as Sensitive Species in the vicinity of Shoshone county. The CDC (1998) has no reported sightings within 1 mile of the study area.

Harlequin ducks are small, generally about 16 ½ inches in length. Male has slate gray breast, back, and wings, with russet sides. A white neck ring separates darker head. Females are generally brownish graduating to lighter shades on the breast with no neck ring. Both males and females have white cheek patches.

In the western United States, harlequin ducks winter along the Pacific Coast from the Pribilof and Aleutian Islands south to central California. Harlequin ducks migrate inland to breed and raise their young on cold, shallow, rapidly flowing, relatively isolated, mountain streams. Breeding areas range from western Alaska and northern Yukon, south to Vancouver Island, eastern Oregon, through Idaho to western Wyoming and in the Sierra Nevada of California (Degraaf, 1991). Entire breeding populations in Idaho is likely less than 100 birds on about 30 streams in northern Idaho (Groves et al, 1997).

Habitat Requirements

Harlequin ducks primarily use riffle, run, and rapid stream habitats with a cobble to boulder substrate. In northern Idaho these are most often second to fifth order streams over 50 meters from a road in mature to old-growth western red cedar/western hemlock (*Thuja plicata/Tsuga heterophylla*) or Engelmann spruce/alpine fir (*Picea engelmannii/Abies lasiocarpa*) overstory (Cassirer and Groves, 1990). Harlequin ducks consistently use clear, clean, swiftly flowing streams, likely due to the abundance of benthic macroinvertebrates associated with these stream reaches.

In Idaho, mature harlequin ducks arrive on streams in March, April, or May. Nests are built on the ground on an island, in a recess in a stream bank, or occasionally in a hollow tree or cavity among the rocks. Egg laying occurs from mid-May to mid-June, possibly timed so hatching occurs with peak stream runoff and high benthic macroinvertebrate availability. Males leave the breeding areas soon after incubation begins, spending roughly 3 months in Idaho, and females with broods spending about 6 months in Idaho. Mean brood size is generally 3-4 ducklings and these hatch in late June or early July. Broods use upstream reaches with slower flows, more vegetation overhang, and more woody debris in the stream than habitat used by solitary adults. Broods generally stay in pools and backwater areas for the first few weeks after hatching. Then, later in summer, harlequin ducks move downstream and use faster water before migrating to the coast in August or September (Cassirer and Groves, 1990).

Hatching and brood survival reflect significant annual variation, with predation and abandonment both major causes of loss. Human disturbance may reduce harlequin duck reproductive success and productivity.

Lack of high gradient streams and lack of cobble substrate in the study area offers little potential for harlequin duck habitat.

1.3.12 Yuma Myotis

The Yuma myotis is federally listed as a Watch Species, and listed by the BLM as a Sensitive Species in Shoshone County. The CDC (1998) has no reported sightings within 1 mile of the study area.

The Yuma myotis is a small bat, total body length being roughly 3 ¼ inches, ears ½ inches, and wing span about 9 ½ inches. Coat color ranges from light tan to dark brown with buffy colored under parts.

Range for this species is from British Columbia, south through the western United States to portions of Mexico (Groves, et al, 1997). In Idaho the Yuma myotis covers a wide elevational range, and likely occurs throughout the state. It is found in a variety of habitats, including riparian, desert scrub, and moist woodlands and forest, but usually near open water. The Yuma myotis is more closely associated with water than any other bat in North America (Barbour and Davis, 1969). Yuma myotis are migratory but little is known of their winter range or habitats.

Habitat Requirements

Foraging takes place early in the evening over open water such as ponds, lakes, and streams. They can be readily observed skimming very close to the water surface. Prey consists of mosquitoes, gnats, moths, and other small, flying insects. Yuma myotis may be locally abundant, but some areas with apparent suitable feeding areas seem to hold no individuals. It is thought that availability of daytime roosts may be a limiting factor in many areas. Daytime roosts include caves, mines, buildings, and bridges.

Yuma myotis form maternity colonies in spring. Mating occurs in fall, with insemination and fertilization being delayed until spring. One pup is born per female from mid-spring to mid-summer. Males are usually absent from nursery colonies and live as solitary individuals (Barbour and Davis, 1969).

It is possible that Yuma myotis occur in and around the study area. Rock out croppings from road-cuts and rock pits exist in or near the area, as well as snags, trees, buildings, and other suitable roosting locations. The St. Maries River and oxbows provide foraging habitat required for Yuma myotis. Lack of knowledge and available literature on the habits of myotis species hinder conclusive analysis.

1.3.13 Northern Alligator Lizard

The northern alligator lizard is federally listed as a Watch Species in Shoshone County. The CDC (1998) has no reported sightings within 1 mile of the study area.

Northern alligator lizards are small reptiles, usually less than 4 inches long. Color is tan to golden brown with dark brown spots arranged in rows down the top of the back, graduating to irregular vertical bars or cross banding along the sides.

Northern alligator lizards range down the Pacific Coast from southern British Columbia to central California. They also occur in the Rocky Mountains from British Columbia, southeast into northern Idaho and western Montana.

Habitat Requirements

Northern alligator lizards occur in humid areas, especially in grassy, grown over open areas of coniferous forests such as clear-cuts and meadows. They are frequently found near streams and are sometimes associated with rock outcrops or talus where prey of insects and arthropods are abundant. Common home-sites include fallen logs, rocks, old buildings, and brush piles.

Northern alligator lizards hibernate during winter, the length of the inactive period depending on local climate. Mating in northern alligator lizards occurs in April and May, resulting in 3-4 fully developed offspring 3 months later.

The study area likely contains habitat suitable for northern alligator lizards. Past logging operations have provided many home and foraging sites such as stumps and down logs in adjacent sites. The river also provides logs and woody material for home-sites in the form of driftwood.

1.3.14 Coeur d'Alene Salamander

The Coeur d'Alene salamander is federally listed as a Watch Species, listed by the state of Idaho as a Species of Special Concern, and by the Forest Service and BLM as Sensitive Species in Benewah and Shoshone Counties. The CDC (1998) has no reported sightings within 1 mile of the study area.

The Coeur d'Alene Salamander is the only lungless salamander known within the northern Rocky Mountains. Populations have been confirmed in southeastern British Columbia, northwestern Montana, and northern Idaho south to the Salmon River. Most known populations in Idaho occur in Kootenai, Clark Fork, St. Joe, and North Fork of the Clearwater River drainages. Closest known sightings of Coeur d'Alene salamanders to the study area was in April, 1989. The sighting was at Township 41 North, Range 1 East, Section 31, in Shoshone County. This is approximately 4 miles southwest of the study area.

Color is predominantly dark, with a red, green orange or yellow stripe extending length wise down the middle of the back, and a yellow throat patch. Length is approximately 2-3 inches.

Habitat Requirements

Coeur d'Alene salamanders prefer waterfall spray zones, spring seeps, and streamsides associated with fractured bedrock, high substrate moisture, high relative humidity, and moderate temperatures. They spend much of their time subterranean within the interstitial spaces between rocks, and forage primarily on aquatic insects. They are most active at night during wet spring and fall conditions.

In northern Idaho, Coeur d'Alene salamanders hibernate from November until late March. They are only active on the surface during the wetter months of April and May. During the warm, dry months of summer the Coeur d'Alene salamander goes below ground to aestivate, except near seeps and waterfalls where they may remain active. They return to the surface with the start of the fall rains and remain so until cold weather drives them to hibernation.

Mating occurs in late summer and fall. Females store the sperm up to nine months before fertilizing the eggs in spring (Groves et al, 1997). In April or May the female will lay an average of 6 eggs. Hatchlings will emerge from under ground in September. They do not mate until their fourth or fifth year, breeding biennially in Idaho (Groves et al, 1997).

Much of the area included in the study area is covered with deep, alluvial soils with no exposed bedrock or rock out-croppings to provide cover for these animals. This and lack of other suitable habitats such as waterfalls and rocky seeps make the study area unlikely Coeur d'Alene salamander habitat.

1.4 Common Wildlife

1.4.1 Habitats

For ease of organization, we have divided habitats into 6 major categories; 1) dry meadow, 2) wet meadow, 3) pond/marsh, 4) deciduous shrub/cottonwood, 5) mature cottonwood, and 6) coniferous forest.

Dry Meadow

Dry meadow habitat for this classification is generally a human-altered condition. These areas were likely once western red cedar and spruce bottoms, cleared during early logging operations and converted for agriculture and transportation. Several old railroad beds are apparent in areas south of the highway. Most of the dry meadow habitat areas are characterized by heavy cattle grazing and dominated by non-native grasses and forbs, with some native remnants, sedges, and rushes. Meadow may be considered wet or dry (Thomas, 1979), dominated by herbaceous vegetation, with height generally less than 3 feet.

Dry meadow in the study area was defined as being dominated by *Agrostis spp.*, red fescue (*Festuca rubra),* Kentucky bluegrass *(Poa pratensis),* timothy (*Phleum pratense),* orchard grass (*Dachtylis glomerata),* and clover (*Trifolium spp.).* Estimation for total coverage of dry meadow is 140.2 acres.

Wet Meadow

Wet meadow areas in the study area were defined as those being dominated by sedges (*Carex spp.),* rushes (*Juncus spp.),* reed canary grass (*Phalaris arundinacea),* and meadow foxtail (*Alopecurus pratensis).* Wet meadow is typically inundated for brief periods of the year, with water tables at or near the soil surface the remainder of the year. Estimation of total coverage of wet meadow is 125.6 acres.

Pond/Marsh

Pond/Marsh habitat is a wetland area characterized by some degree of standing water and the dominance of single plant; cattails (*Typha latifolia).* Cattle or wild ungulates do not usually graze cattails and the presence of cattails creates a definitive cover change or edge. This edge is most often characterized as pond/marsh to meadow, or pond/marsh to deciduous shrub habitats. Another edge exists between the pond, or standing water, and the cattail stand. Many species of waterfowl and other wildlife utilize these edges. Cattail cover height is generally more than 3 feet during summer and often, when bent over from heavy snowfall, provides hiding or burrowing cover for many small birds and mammals.

The oxbows found within the study area provide a variety of pond/marsh habitats. Some appear to contain standing water year round, while others are seasonally flooded. Pond/marsh habitat accounts for approximately 15 acres within the study area.

Deciduous Shrub/Cottonwood

Deciduous shrub/cottonwood habitats are areas dominated by deciduous woody vegetation, and within the project site are often accompanied by a cottonwood overstory. Areas dominated by this habitat type include; stream bank or top of stream bank, oxbow areas, and sites typified by seasonal flooding. The interface between deciduous shrub and meadow within riparian areas is often associated with a change in the water table depths.

Four plants, either singly or in association, dominate this habitat type; thin-leaf alder (*Alnus incana),* Red-osier dogwood (*Cornus stolonifera),* willow (*Salix spp.),* and hawthorn (*Crataegus douglasii).* A grass-forb or sedge rush community understory most often accompanies this habitat. Scattered throughout most of this habitat are mature cottonwoods (*Populus trichocarpa)*, and occasional aspen (*Populus tremuloides)* stands. Cover height ranges to 30 feet, and 60 feet where cottonwood or aspen are present.

Sixty acres within the study area have been estimated to be deciduous shrub/cottonwood habitat type. Shrubs within the site consist of older mature plants with very little recruitment of replacement plants. This is likely a result of domestic livestock grazing.

Mature Cottonwood

Mature cottonwood stands are characterized as monotypic stands with a grass-forb or sedge-rush understory. Snags and down logs are common in this system. Mature stands of cottonwood within the project area occur mainly along top of bank and oxbows of the St. Maries River.

These stands within the study area are primarily mature trees only, with young recruitment trees virtually non-existent. The lack of new recruitment is likely the result of domestic livestock grazing. Total coverage of mature cottonwood habitat type is estimated to be 5 acres.

Coniferous Forest

Coniferous forest was found in small amounts in the study area in scattered pockets. They were predominantly a forest overstory of western red cedar (*Thuja plicata),* Engelmann spruce (*Picea engelmannii),* lodgepole pine (*Pinus contorta),* and Douglas fir. They contained a shaded understory of deciduous shrubs including Red-osier dogwood, thin-leaf alder, willow, and snowberry (*Symphoricarpos albus).* A sparse grass-forb or sedge-rush layer was also found beneath the coniferous forest type. One stand of approximately 1 acre consisted nearly entirely of mature western red cedar with no understory.

Total coverage of coniferous forest habitat type is estimated to include 10 acres. Some recruitment can be seen around the edge of several patches, mainly lodgepole pine, and would be expected to expand without disturbance.

Table 1.4.1A Acreage Estimates of Wildlife Habitat Type within Study Area.

Dry Meadow	Wet Meadow	Pond/Marsh	Deciduous Shrub/ Cottonwood	Mature Cottonwood	Coniferous Forest
140.2 Acres	125.6 Acres	15 Acres	60 Acres	5 Acres	10 Acres

1.4.2 Common Wildlife Species

During surveys conducted for T&E and Sensitive wildlife species, the sightings of additional wildlife species were recorded within the corresponding habitat. Tables 1.4.2 A-F list these species as well as others expected to be found in the associated habitats. These lists represent a portion of the most common and visible animals found in the designated habitats but does not include all species that may use these areas. Some species were absent from the area during surveys because of migration due to time of year or weather conditions. Habitat use by various species overlap, and some species likely exist on the study area that are not listed.

Table 1.4.2. A. Selected Common Wildlife Using Dry Meadow Habitats in Study Areas.

Dry Meadow Habitat

Birds	Mammals	Reptiles and Amphibians
* northern harrier * rough legged hawk * raven * red-tailed hawk ▪ American kestrel ▪ Killdeer ▪ Brewer's blackbird ▪ Sparrow spp. ▪ American robin	* coyote • Columbian ground squirrel * white-tail deer * northern pocket gopher ▪ montane vole ▪ badger	▪ western toad ▪ western terrestrial garter snake

* animal or sign seen during field surveys
▪ animal generally expected to be found in this habitat
spp. denotes various species present

Table 1.4.2. B. Selected Common Wildlife Using Wet Meadow Habitats in Study Areas.

Wet Meadow Habitat

Birds	Mammals	Reptiles and Amphibians
* rough legged hawk	* coyote	▪ western toad
* raven	* white-tail deer	▪ western terrestrial garter snake
* red-tailed hawk	* northern pocket gopher	
▪ American kestrel	▪ montane vole	
▪ Killdeer		
▪ Brewer's blackbird		
▪ Sparrow spp.		
▪ American robin		

* animal or sign seen during field surveys
▪ animal generally expected to be found in this habitat
spp. denotes various species present

Table 1.4.2. C. Selected Common Wildlife Using Pond/Marsh Habitats in Study Areas.

Pond/Marsh Habitat

Birds	Mammals	Reptiles and Amphibians
* mallard	* muskrat	▪ spotted frog
* belted kingfisher	* beaver	▪ painted turtle
* American dipper	* coyote	▪ common garter snake
▪ great blue heron	▪ bat spp.	
▪ osprey	▪ mink	
▪ Canada goose	▪ river otter	
▪ Common merganser		
▪ Greater yellowlegs		
▪ Spotted sandpiper		
▪ red-winged blackbird		
▪ wood duck		
▪ teal spp.		
▪ Bank swallow		
▪ Common Snipe		

* animal or sign seen during field surveys
▪ animal generally expected to be found in this habitat
spp. denotes various species present

Table 1.4.2. D. Selected Common Wildlife Using Deciduous Shrub/Cottonwood Habitats in Study Areas.

Deciduous Shrub/Cottonwood Habitat

Birds	Mammals	Reptiles and Amphibians
* red-tailed hawk	* beaver	▪ common garter snake
* belted kingfisher	* muskrat	▪ western terrestrial garter snake
* northern flicker	* coyote	▪ spotted frog
* chickadee spp.	* white-tailed deer	▪ painted turtle
* rough-legged hawk	* elk	
* American dipper	▪ moose	
* American robin	▪ mink	
* dark-eyed junco	▪ ermine	
▪ tree swallow	▪ long-tailed weasel	
▪ American kestrel	▪ river otter	
▪ Osprey	▪ bat spp.	
▪ Ruffed grouse		
▪ Western bluebird		
▪ Mountain bluebird		
▪ Flycatchers spp.		
▪ Various warblers, vireos, sparrows, and hummingbirds spp.		
▪ Black-billed magpie		

* animal or sign seen during field surveys
▪ animal generally expected to be found in this habitat
spp. denotes various species present

Table 1.4.2. E. Selected Common Wildlife Using Cottonwood Habitats in Study Areas.

Cottonwood Habitat

Birds	Mammals	Reptiles and Amphibians
* red-tailed hawk	* beaver	▪ common garter snake
* belted kingfisher	* muskrat	▪ western terrestrial garter snake
* northern flicker	* coyote	▪ spotted frog
* chickadee spp	* white-tailed deer	▪ painted turtle
* rough-legged hawk	* elk	
* American dipper	▪ moose	
* American robin	▪ mink	
* dark-eyed junco	▪ ermine	
▪ tree swallow	▪ long-tailed weasel	
▪ great blue heron	▪ river otter	
▪ wood duck	▪ bat spp.	
▪ hooded merganser		
▪ American kestrel		
▪ Osprey		
▪ Western bluebird		
▪ Mountain bluebird		
▪ Flycatchers spp.		
▪ Various warblers, vireos, and sparrows spp.		

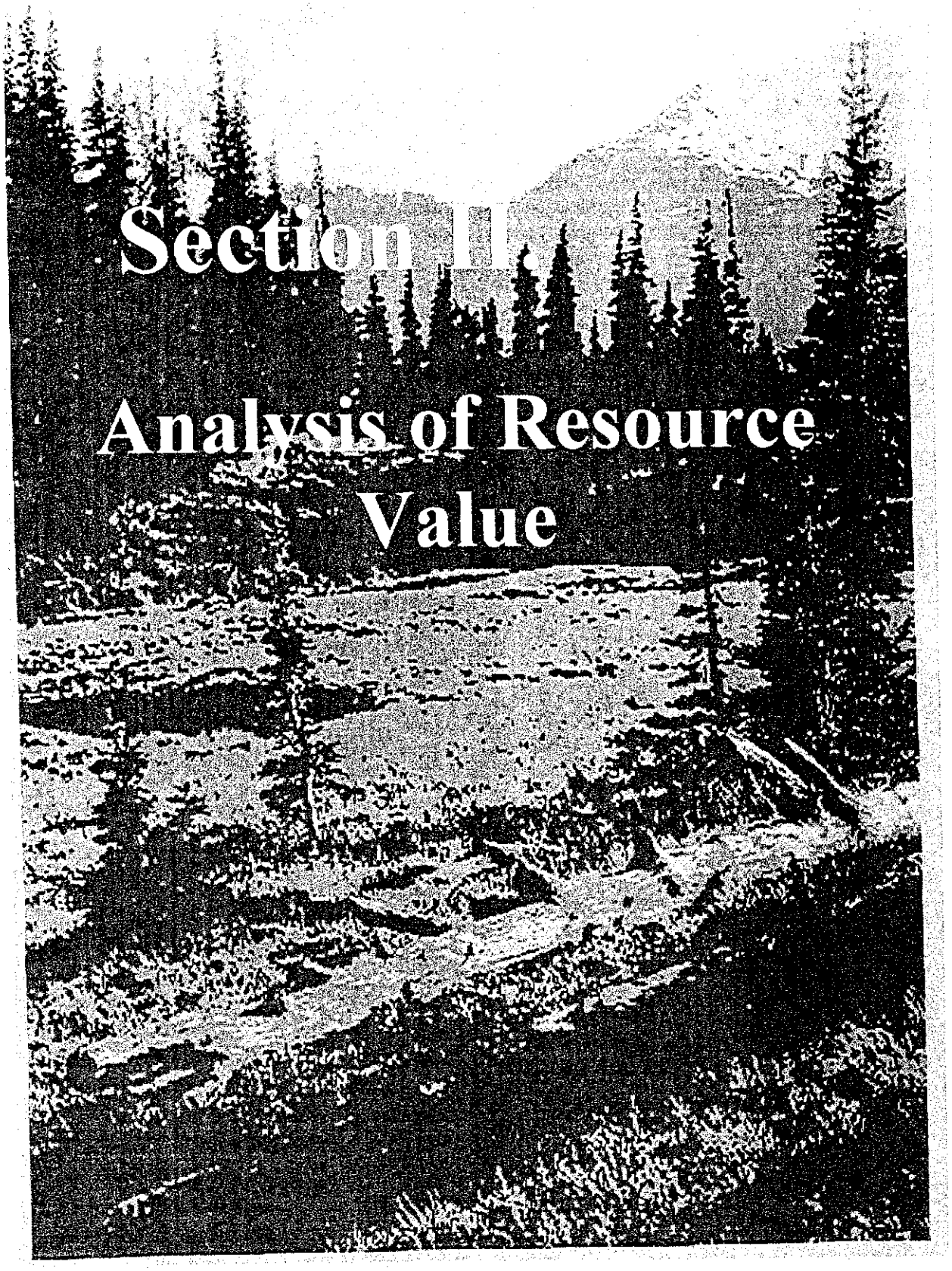
* animal or sign seen during field surveys
▪ animal generally expected to be found in this habitat
spp. denotes various species present

Table 1.4.2. F. Selected Common Wildlife Using Coniferous Forest Habitats in Study Areas.

Coniferous Forest Habitat

Birds	Mammals	Reptiles and Amphibians
* red-tailed hawk	* coyote	▪ common garter snake
* northern flicker	* white-tailed deer	▪ western terrestrial garter snake
* chickadee spp	* elk	▪ spotted frog
* rough-legged hawk	▪ moose	
* American robin	▪ mink	
* dark-eyed junco	▪ ermine	
▪ tree swallow	▪ long-tailed weasel	
▪ great horned owl	▪ bat spp.	
▪ osprey	▪ mountain lion	
▪ gray jay	▪ bobcat	
▪ kinglets spp.	▪ porcupine	
▪ Nuthatch spp.	▪ chipmunk spp.	
▪ Mountain bluebird	▪ red squirrel	
▪ Flycatchers spp.	▪ black bear	
▪ Various warblers, finches, vireos, and sparrows spp.		
▪ Cedar waxwing		
▪ Steller's jay		
▪ Gray jay		
▪ Grosbeak spp.		
▪ Woodpecker spp.		

* animal or sign seen during field surveys
▪ animal generally expected to be found in this habitat
spp. denotes various species present



Section II

Analysis of Resource Value

SECTION II. ANALYSIS OF RESOURCE VALUE

2.1 Federally Listed Threatened and Endangered Species

2.1.1 Gray Wolf

The gray wolf was common in the northern Rocky Mountains prior to settlement in the late 1800's. After large wild ungulate numbers were reduced due to unregulated hunting and habitat encroachment, extermination of large predators became a priority, primarily due to conflicts with domestic livestock. Wolf populations disappeared from the western United States by 1930 (USDI, 1987). Many activities have occurred in the project area since the early 1900's. During the 1910's and 1920's the area was heavily logged and roaded. Many river bottom and low relief areas were converted from forested to pasture areas. Wolves likely used the study area before these factors reduced the suitability of the area as wolf habitat.

The benefit and value of wolves and wolf populations have been heavily argued in recent years by land managers, wildlife professionals, natural resource users, and laypersons. A few benefits include:

- increased health of the prey species populations by culling unfit individuals,
- the benefit of a complete native and natural ecosystem,
- the aesthetic benefits humans attribute to wilderness areas and wildlife, and,
- studies have indicated wolf recovery in central Idaho would increase the local economy by a net $6-$8 million per year (USDI, 1993).

Wolves require large home ranges of up to 100 sq. miles (Mech, 1970), and require large areas of isolation to assure minimal human disturbance. Lack of isolation from human disturbance limits the value of the study area as wolf habitat. High road density, close human population centers, cattle grazing, and logging could all likely contribute to limit wolf survival should even a transient venture into the area.

2.2 Threatened, Endangered, and Sensitive Species with Potential to Occur on or Near Study Area.

Species in this section are listed as occurring in Shoshone or Benewah counties. The study area was evaluated for habitat suitability and possible use or presence of these species. None of these species have been documented within the study area, or is the study area within a radius-of-concern for confirmed sightings

2.2.1 Grizzly Bear

Grizzly bears, like wolves, were quickly extirpated from northern Idaho following settlement. They were subject to hunting, trapping, and suitable habitat loss due to increased land development and resource use.

Grizzly bears are large animals, which require large home ranges (50-1000 sq. miles depending on habitat quality) to acquire the amount of food they need. Values associated with grizzly bears include aesthetics associated with wildland settings, education, and historical importance.

The most important aspect of grizzly bear habitat is likely large isolated areas. With the high amount of human activity and habitation, habitat value of the study area as grizzly bear habitat is likely low to non-existent.

2.2.2 Bald Eagle

Bald eagles are primarily associated with large bodies of water bordered by coniferous forest. The large water body can be a river, lake, or the ocean. This association is tied to their preferred diet of fish. Fish are caught directly or stolen from osprey and gulls. The 2nd largest bird in North America, bald eagles require large amounts of food. They often rely on carrion of during winter and spring months when it is available.

Nesting most commonly takes place on the broken top of a large tree. These trees need to be fairly large to support the often-massive nest structure, which is built from sticks and limbs.

Limiting factors for nesting bald eagles within and near the proposed project site likely include lack of sufficient food resources. The St. Maries River does not likely support fish populations of sufficient size fish for eagles, and relatively low wintering big game populations in the area are not large enough to provide a sufficient carrion source.

2.2.3 Lynx

The lynx is a wide-ranging predator that is closely associated with its primary prey species, snowshoe hares. It also preys heavily on voles and other forest dwelling rodents. Lynx are elusive animals that prefer wilderness areas free from human disturbance. They seldom enter open areas such as clearings or meadows, keeping to closed forest.

Preferred forest habitats are early seral, sapling to pole stage with dense canopy cover. The study area does not contain preferred habitats, and is considered to be located on the edge of lynx range in Idaho. For these reasons and the amount of human activity and roads present, value of the study area for lynx habitat is considered low. It is unlikely that a lynx would include the study area within a home range.

2.2.4 Wolverine

The wolverine was believed to be extinct in Idaho by the 1930's (Davis, 1939). The first verified records of a wolverine in Idaho was an animal that was trapped in Bonners County in 1949 Groves, 1987). In Idaho, a 1985 survey indicated that wolverines inhabit remote, mountainous habitats unaffected by human disturbance (Groves et al, 1997).

Like wolves, wolverines occupy large home ranges and rely heavily on areas isolated from human activity. High road density, close human population centers, logging operations, and recreational activities all combine to lower the value of the study area and adjacent areas as wolverine habitat.

2.2.5 Fisher

Fishers are common in many parts of Canada, western mountain ranges, the northern Midwest, and northern Atlantic states where they are valuable furbearers. Like the wolverine, the fisher is associated with backcountry areas subject to low human disturbance.

Fishers are predators of the interior forest, their main prey consisting of small mammals such as voles, squirrels, and rodents. Preferred habitats are mature closed forests. Snags and down logs are important habitat components providing denning and foraging habitat. Openings and clear cuts are avoided.

Forests adjacent to the study area may contain suitable habitats for migrant animals but relatively small patch size would likely limit the chance of permanent residents. The study area consists primarily of meadow, which is of little value to fisher habitat.

2.2.6 Goshawk

Warren (1990) recommended that at least 5,000 acres be used to assess the potential habitat as goshawk home range, and, on average, goshawk territories are separated by1-4 miles. Nest territories most likely consist of mature and old growth stands over 25 acres, have a canopy closure of at least 60%, and contain Douglas fir, western larch (*Larix occidentalis*), and aspen.

Within the valley bottoms of the study area, these specific mature forest types are non-existent. There may be preferred nesting habitats in adjacent areas, and if so, it is possible that the proposed project site lies within a goshawk territory.

2.2.7 Boreal Owl

In Idaho, boreal owls are closely associated with spruce/subalpine fir and lodgepole habitat types, typically over 5,000 feet in elevation. They will nest at lower elevations of the same preferred forest type in situations where nest cavities are in limited supply (Bull, 1980). Boreal owls forage in pole or larger timber with small, interspersed openings.

The study area consists mainly of meadow, with elevations below 5,000 feet. For these reasons, it is unlikely to support breeding or individual boreal owls.

2.2.8 Flammulated Owl

Flammulated owls prefer old growth forest stands dominated by ponderosa pine but will also use Douglas fir and grand fir forest types for nesting and foraging. No such stands exist within the study area but may be encountered in adjacent areas. It is likely these adjacent areas may support flammulated owls, and they may use the project site to some extent.

2.2.9 Upland Sandpiper

Upland sandpipers are typically associated with dry grassland habitat in Idaho, and are not associated with wetlands (Groves, et al, 1997). Dry sites are selected for nest construction, with nests placed in shallow depressions. Foraging habitat typically consists of short grass areas allowing the upland sandpiper an unobstructed field of vision.

Dry meadow habitat preferred by upland sandpipers is marginal within the project area. Most of the meadow area is relatively wet, limiting suitable nesting habitat.

2.2.10 Harlequin Duck

Harlequin ducks utilize specialized stream habitats in Idaho. Stream attributes of harlequin duck breeding habitat include:

- high gradient with swift flows,
- riffle, run, and rapid sections of these streams,
- cobble to boulder substrate,
- 50 m minimum distance from a road, and
- a mature overstory of western red cedar/western hemlock, or Engelmann spruce/subalpine fir overstory.

The study area, comprised mainly of an open meadow, parallels the St. Maries River. River gradient is relatively low within the study area, with substrate ranging from silt to cobble. Overstory is sparse, consisting mainly of remnant cottonwoods. Several tributaries enter the river within the study area. They are small (generally less than 1 m in width), have silt-gravel substrates, low gradient, and little or no overstory.

Based on the factors given above, value of the study area for harlequin duck habitat is considered low.

2.2.11 Yuma Myotis

The Yuma myotis is found in and around forested settings near open water (Barbour and Davis, 1969). Yuma myotis forage above riparian areas and open water on mosquitoes, gnats, and other small flying insects. They roost in caves, mines, tree cavities, buildings, and under tree bark. Foraging bats are valued for their feeding habits in which they consume vast quantities of insects.

The meadows encompassing the study area possibly offer foraging sites and a foraging base for the Yuma myotis. Numerous buildings and proximity of forest provide bats with roosting sites.

2.2.12 Northern Alligator Lizard

Northern alligator lizard habitat consists of open, grown over areas within coniferous forests such as clear-cuts and meadows. Home sites within these areas can be under fallen logs, rocks, brush piles, and old buildings. These areas can also serve as foraging sites, often being home to insects, grubs, slugs, and spiders.

Several areas within the study area could possibly provide northern alligator habitat. Forest surrounding the area contains many down logs, tree stumps, down brush, and rocks which could provide northern alligator lizards with home sites. Driftwood, fallen logs, and abandoned equipment within the area may provide home sites. Within these sites a sufficient insect base to provide foraging opportunities likely exists as well.

2.2.13 Coeur d'Alene Salamander

Coeur d'Alene salamanders prefer waterfall spray zones, spring seeps, and streamsides associated with fractured bedrock, high substrate moisture, high relative humidity, and moderate temperatures. They spend much of their time subterranean within the interstitial spaces between rocks, and forage primarily on aquatic insects. They are most active at night during wet spring and fall conditions.

Preferred habitat sites of fractured bedrock, waterfall splash zones, and spring seeps are not present within the study area. Due to lack of suitable habitat, the study area likely has little value for Coeur d'Alene Salamander habitat.

2.3 Common Wildlife Evaluation

2.3.1 Habitat

General wildlife habitats present within the study area were named and delineated as to cover present. Full descriptions are included in section 1.4.1, Wildlife Habitats. The 6 general classifications present are; 1) dry meadow, 2) wet meadow, 3) pond/marsh, 4) deciduous shrub/cottonwood, 5) mature cottonwood, and 6) coniferous forest. These general habitats provide associated wildlife with the needs to live all or a portion of their lives. Some species are year round residents, while others are seasonal inhabitants.

Acreage of each habitat class was estimated by interpreting aerial photographs and ground observation of the study area. These were intended for approximating the type and amount of each habitat class present.

Table 2.3.1. Acreage Estimates of Wildlife Habitat Type Within Study Area.

Dry Meadow	Wet Meadow	Pond/Marsh	Deciduous Shrub/ Cottonwood	Mature Cottonwood	Coniferous Forest
140.2 Acres	125.6 Acres	15 Acres	60 Acres	5 Acres	10 Acres

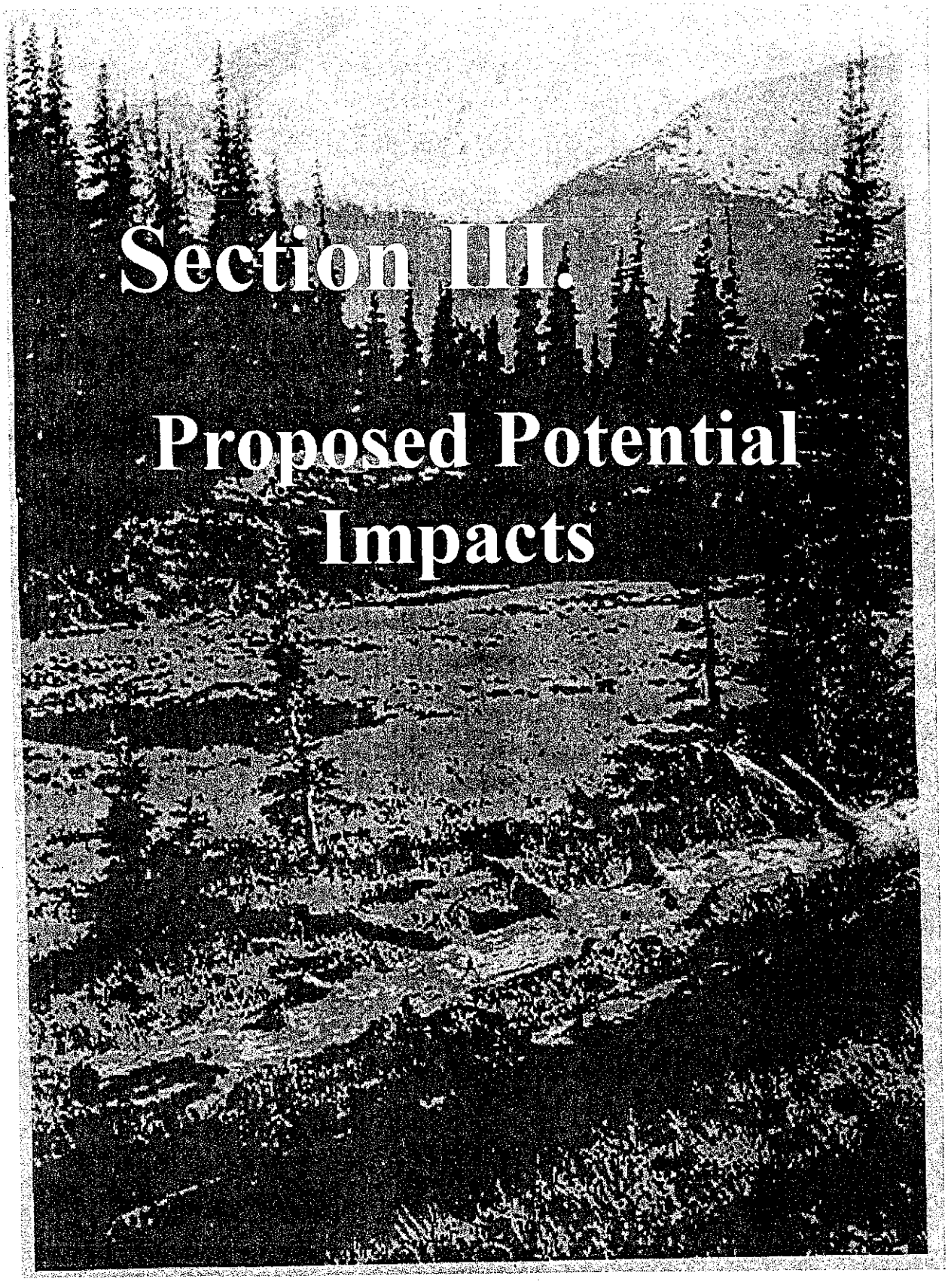
2.3.2 Common Wildlife Species

The study area is valued habitat to many common wildlife species. Fifteen species of wildlife were observed directly or identified by sign such as tracks, droppings, or nests. A list of these species as well as a species expected to be found in the area is included in Tables 1.4.2, A-E. These tables represent a portion of the most common and visible wildlife species expected in the area and are not meant to be a complete list. Table 2.4.2. lists many of the more common species and their general habitat uses. This is a representative list of what the study area is capable of supporting and not a complete listing.

Table 2.3.2. Common Wildlife Species Expected, and General Habitat Use Within the Study Areas. After Thomas (1979).

Wildlife	Hunts and/or Feeds	Reproduces / Has Young
Western toad, spotted frog	on the ground, in water, meadow, or pond/marsh	in water
Painted turtle, garter snake, Canada goose, mallard, green-winged teal, common snipe, spotted sandpiper, greater yellow legs, dipper	on the ground, in deciduous shrub, forests, in streams and pond/marsh	on the ground near water
bank swallow, common raven, bats (spp.), bobcat	on the ground, in deciduous shrub, or forest trees, and in the air	in cliffs, caves, or talus
Northern harrier, ruffed grouse, hermit thrush, dark-eyed junco, elk, white-tailed deer, moose	on the ground	on the ground, in deciduous shrubs, or forest trees without specific water, cliff or talus association
Hummingbird spp., flycatchers spp., black-billed magpie, American robin, cedar waxwing, warblers spp., red-winged blackbird, brown-headed cowbird, chipping sparrow	on the ground, in deciduous shrubs, forest trees, in the air	in deciduous shrubs

Wildlife	Hunts and/or Feeds	Reproduces / Has Young
gray jay, Steller's jay, kinglets spp., varied thrush, vireo spp., warbler spp., grosbeak spp., siskins, red squirrel	in forest trees, deciduous shrubs, on the ground, or in the air	primarily in forest trees, conifers
red-tailed hawk, great horned owl, great blue heron	on the ground or in water	on thick tree branches
Common flicker, pileated woodpecker, red-naped sapsucker, downy and hairy woodpecker, red and white-breasted nuthatch	in forest trees, deciduous shrubs, on the ground, or in the air	in self-excavated hole in tree
wood duck, common merganser, American kestrel, swallow spp., chickadee spp., western and mountain bluebird, bat spp., northern flying squirrel	on the ground, in the air, or in water	in a hole excavated by others or a natural cavity
red-tailed chipmunk, Columbian ground squirrel, northern pocket gopher, montane vole, coyote, black bear, ermine, long-tailed weasel	on the ground or under it	in a burrow underground
belted kingfisher, swallow spp., beaver, muskrat, mink, river otter	in the air or in the water	in a burrow underground



Section III:

Proposed Potential Impacts

SECTION III. PROPOSED POTENTIAL IMPACTS

3.1 Habitats

The garnet mining process can be broken into three distinct steps:

1. Removal of vegetation.
- Trees, shrubs, and all herbaceous vegetation is removed from the area to be mined.
2. Mineral removal.
- Topsoil is scraped from the surface and stockpiled,
- Subsurface soils and gravel is excavated,
- Garnets are separated from the excavated material.
3. Restoration.
- Subsurface soil and gravel returned to place,
- Topsoil redistributed,
- Area is replanted to native woody and herbaceous vegetation.

This mining/restoration process typically takes place in yearly increments, and performed on sections rather than the entire site at once. That is, a site is mined in one year, then restored that autumn or the following spring while starting the next mining site. During the mining process, most useable wildlife is temporarily destroyed until the mitigation process is completed. The time it takes to restore a site to its pre-mining condition depends upon many variables dependant upon restoration methods, and the speed at which they are performed. These methods and timing are critical factors in assessing the impacts of mining on wildlife habitat.

3.2 Federally Listed Threatened and Endangered Species

3.2.1 Gray Wolf

Given the habitat requirements necessary, it is highly unlikely that a gray wolf would take up residence in the study area. The range of the gray wolf is thought to exceed 100 square miles, and an occasional transient individual may wander through. The high incidence of human disturbance, high density of open roads, and lack of suitable denning and rendezvous sites are considered limiting factors for gray wolf residence in the study area. In addition, the adjacent areas are subject to a number of other human activities such as; timber harvest, firewood cutting, hunting, camping, and recreational mining. The disturbance from these activities would further reduce the area as potential wolf habitat.

3.3 Threatened, Endangered, and Sensitive Species with Potential to Occur on or Near the Study Area.

3.3.1 Grizzly Bear

The likelihood of grizzly bear occurrence within the study area is highly doubtful for much the same reasons as listed above for gray wolf. Grizzly bears are highly sensitive to human disturbance and population centers. A major highway bisects the study area making the site undesirable for even a transient animal to pass through the area.

3.3.2 Bald Eagle

Bald eagle habitat is typically associated with mature forest in close proximity to large water bodies such as large rivers, lakes, and ocean. This association is tied to the bald eagles' dependency on fish for it's primary food. Winter food sources are typically large carrion provided by winterkilled deer, elk, moose, and other large game species. The area encompassed by the study area is considered marginal bald eagle habitat due to lack of large water bodies and relatively low wintering big game herds. Individuals sited in the area are likely migrants passing through, and not nesting or wintering birds.

Habitat impacts are projected non-existent to minimal for bald eagles.

3.3.3 Lynx

The study area contains little or no habitat suitable for lynx populations. The site is a meadow type system with little understory cover within the shrub areas to provide security or thermal cover. Mature forest coverage in the study area is nearly zero. These are both seen as limiting factors in the sites capability of supporting lynx populations. Areas adjacent to the study area may provide the resources required for lynx habitat, and it is possible that a transient animal could pass through the site. Potential impacts on lynx or lynx habitats are projected negligible to non-existent.

3.3.4 Wolverine

The most important component of quality wolverine habitat is isolation from human disturbance (Wilson, 1982; USDA, 1989). Like the wolf, wolverine habitat within the study area is presently considered low due to proximity of human population centers and high road density. Large home ranges and travel patterns increase the likelihood of a transient individual moving through the area, but it is highly unlikely an animal would include the study area as a regular part of a home range. Impacts in the study area are projected negligible to non-existent.

types. Streams within the study area are low gradient, have silt to gravel substrates, and flow through meadow habitat types.

Due to present lack of suitable harlequin duck habitat, potential impacts are projected to be non-existent.

3.3.11 Yuma Myotis

Yuma myotis are often associated with open water, riparian systems, and forests. They forage in these areas for flying insects and utilize buildings, trees, caves, and mines for roosting sites. The study area offers potential foraging sites for Yuma myotis, with potential roosting sites available adjacent to the study area.

Direct impacts to habitats from mining will take place during daylight hours, and on relatively small scale to the local area. Potential roosting habitat of adjacent area will not be disturbed by mining operations. Impacts to Yuma myotis inhabiting the general area will be negligible.

3.3.12 Northern Alligator Lizard

Northern alligator lizard habitat is often associated with humid, grassy, or grown over open areas of coniferous forests. Common sites include clear cuts, wet meadows, rock outcroppings, and often near streams and seeps. They often live under fallen logs, rocks, and old buildings.

Potential habitats for northern alligator lizards within the study area are likely restricted to small areas of forest edge, and possibly edges of pond/marsh habitats. Some habitat will likely be temporarily destroyed during the mining process. A buffer along the river, and tributaries bisecting the study area which provide the most favorable northern alligator lizard habitat will remain undisturbed. Impacts to northern alligator lizard habitat will be negligible.

3.3.13 Coeur d'Alene Salamander

Coeur d'Alene salamander habitat consists of waterfall splash zones, springs, and seeps, especially when associated with fractured bedrock and boulder substrate. Here they inhabit the interstitial spaces of the rock, only emerging to the surface during nighttime hours.

No suitable Coeur d'Alene habitat was discovered within the study area during field surveys. Due to lack of suitable habitat currently present, potential impacts are likely non-existent.

3.3.5 Fisher

Fishers are considered interior forest residents with little tolerance for open areas. They prefer riparian areas within old growth forest and avoid openings such as clear cuts and meadows. The meadow habitats of the study area offer no suitable fisher habitat. It would be unlikely for even a transient animal to pass through the site. Impacts on fishers are projected negligible to non-existent.

3.3.6 Goshawk

Surveys conducted on Dec. 3 did not reveal any evidence of goshawk presence or suitable habitat within the study area, however, large expanses of preferred habitat can be viewed from the study area in most directions. With suitable habitats near the study area, it is possible that the study area could lie within a goshawk territory. Impact to goshawk habitat is estimated to be minimal.

3.3.7 Boreal Owl

Boreal owls are interior forest species preferring mature spruce/subalpine fir, or lodgepole pine habitat types. Typically these habitats occur above 5,000 feet in elevation (Hayward, 1989). No habitats within the study area meet these requirements. Because preferred habitats do not presently exist, impact to boreal owls is projected to be non-existent.

3.3.8 Flammulated Owl

Preferred habitats for flammulated owls are old growth stands of ponderosa pine, Douglas fir, and grand fir above 3,000 feet in elevation. The study area lacks forested habitats suitable for flammulated owls. For this reason, impacts are expected to be non-existent.

3.3.9 Upland Sandpiper

Upland sandpipers are inhabitants of dry meadow and prairie settings. Meadow habitats within the study area are relatively wet, and were likely converted from forest within the last 100 years. High water tables within the meadows and remoteness of these areas from suitable habitat sites may be limiting factors for fitting upland sandpiper habitat.

Removal of vegetation and disturbance from everyday mining activities will adversely impact potential upland sandpiper habitat within the study area. However, due to the lack of upland sandpiper occurrence, potential impacts are projected to be minimal.

3.3.10 Harlequin Duck

Harlequin duck nesting habitat requirements consist of fast flowing streams with cobble to boulder substrate, in mature to old growth western red cedar/western hemlock habitat

types. Streams within the study area are low gradient, have silt to gravel substrates, and flow through meadow habitat types.

Due to present lack of suitable harlequin duck habitat, potential impacts are projected to be non-existent.

3.3.11 Yuma Myotis

Yuma myotis are often associated with open water, riparian systems, and forests. They forage in these areas for flying insects and utilize buildings, trees, caves, and mines for roosting sites. The study area offers potential foraging sites for Yuma myotis, with potential roosting sites available adjacent to the study area.

Direct impacts to habitats from mining will take place during daylight hours, and on relatively small scale to the local area. Potential roosting habitat of adjacent area will not be disturbed by mining operations. Impacts to Yuma myotis inhabiting the general area will be negligible.

3.3.12 Northern Alligator Lizard

Northern alligator lizard habitat is often associated with humid, grassy, or grown over open areas of coniferous forests. Common sites include clear cuts, wet meadows, rock outcroppings, and often near streams and seeps. They often live under fallen logs, rocks, and old buildings.

Potential habitats for northern alligator lizards within the study area are likely restricted to small areas of forest edge, and possibly edges of pond/marsh habitats. Some habitat will likely be temporarily destroyed during the mining process. A buffer along the river, and tributaries bisecting the study area which provide the most favorable northern alligator lizard habitat will remain undisturbed. Impacts to northern alligator lizard habitat will be negligible.

3.3.13 *Coeur d'Alene Salamander*

Coeur d'Alene salamander habitat consists of waterfall splash zones, springs, and seeps, especially when associated with fractured bedrock and boulder substrate. Here they inhabit the interstitial spaces of the rock, only emerging to the surface during nighttime hours.

No suitable Coeur d'Alene habitat was discovered within the study area during field surveys. Due to lack of suitable habitat currently present, potential impacts are likely non-existent.

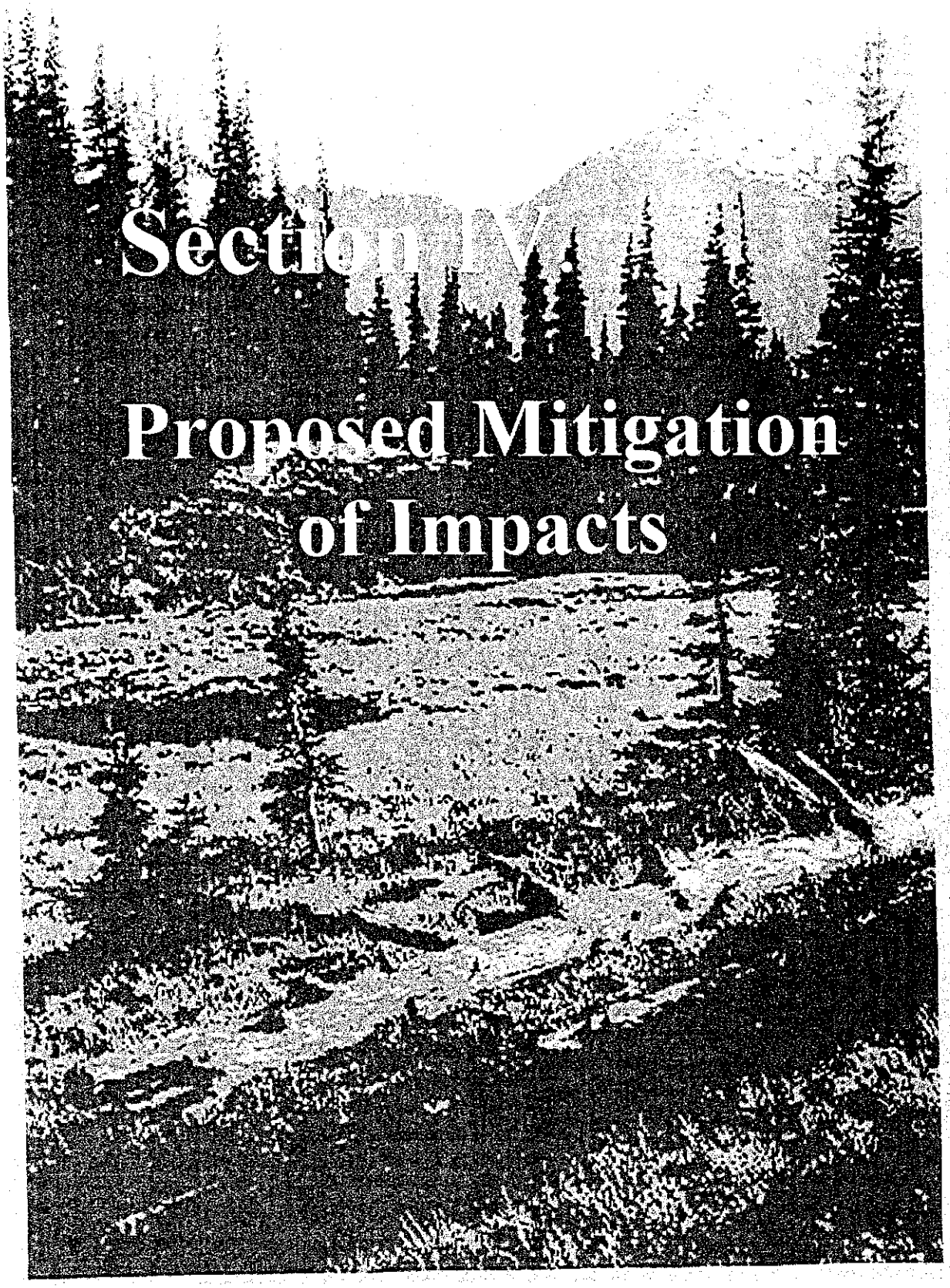
3.4 Common Wildlife

3.4.1 Common Wildlife Species

The study area is host to numerous wildlife species, and all of these species are considered common to the area. Short-term displacement of individuals is expected during the mining process.

Plans call for dividing the study area into 5-15 acre mining units. ECG will mine 1-3 units simultaneously depending on garnet concentrations. Immediately following mining, restoration commences using woody vegetation and wetland sod salvaged from the next mining units. The entire process, from mining to restoration, typically takes from 3-5 years.

Considering the small mining unit size relative to the study area, and short time frame of mining to restoration, potential impacts to common wildlife are expected to be negligible.



Section V:

Proposed Mitigation of Impacts

SECTION IV. PROPOSED MITIGATION OF IMPACTS

4.1 Impact Avoidance

The garnet mining process involves the removal of existing trees, shrubs, and vegetation from the site, stockpiling the topsoil, and then excavating the subsurface soils and gravel containing the garnets. The garnets are separated from the excavated material and the area is restored by returning the gravel and soils to place, redistributing the topsoil, and the replanting the area to native woody and herbaceous vegetation. This process could take as much as three to five years or more to complete in any one area. In the immediate process, until mitigation is completed, most useable wildlife habitat is temporarily destroyed or reduced, and any associated wildlife displaced. Mitigation and the speed at which it is preformed is a critical factor in lessening the impacts to wildlife habitat and local populations.

Of the wildlife species found within the study area, all are considered common. Of the species listed threatened, endangered, or sensitive, none have been identified as using the study area or immediate area.

4.2 Impact Reduction

In the past, Emerald Creek Garnet Ltd. has initiated a number of plans to reduce the impact of mining on wildlife species using their mining areas. These impact reduction methods are included in the mining procedures within the study area.

Areas important to riverbank integrity and sensitive to erosion will not be mined. These areas include a 30-foot buffer along the St. Maries River and corridors encompassing permanent streams in the study area. Buffers along these water systems are composed of deciduous shrub and cottonwood communities important to stream bank stability and wildlife habitat.

The study area will be separated into smaller units of 5-15 acres depending on garnet concentration. Mining will occur on 1-3 units at a time, with restoration to occur the following 2 years.

Restoration Timing

Mining an area one year then restoring the same area the following 2 years will reduce the impact of mining on wildlife and speed the mitigation process. Existing vegetation, including sod mats, trees, and shrubs from pre-mined units will be used for planting stock in post-mined units to restore sites more rapidly. This will lessen the time wildlife will remain displaced from a mining site. Mining small areas relative to the entire study area will also reduces the amount of habitat disturbed at any one time.

Net Total Wetlands

Past garnet mining activities by Emerald Creek Garnet Ltd. has increased net total wetlands, and increased wetland habitat for wildlife. Wildlife such as Canada geese and other waterfowl species are commonly seen using wetlands created by past and even ongoing mining practices. These increased available wetlands produced by the mining practice reduce the overall negative impacts associated with mining upon wildlife species that use this habitat. Existing oxbows within the study area should be replaced in mitigation.

4.3 Impact Compensation

4.3.1 Wildlife Habitat Restoration Plan

The plant species and vegetation planting designs should be chosen carefully to assure a restored native community representative of pre-mining conditions (See Tables 4.3.1. A-F). The planting scheme should be tailored site-specific within the study area to provide quality wildlife habitat. In some cases, native vegetation species not present in pre-mining conditions should be considered to enhance wildlife habitat and proper riparian function. Plant communities that have likely been absent or suppressed from the study area for many years will be reintroduced. Plant species chosen for restoration will provide quality food and cover for mammals, birds, and reptiles and amphibians, and assist in establishing a prey base for predators (Dawes, 1993).

Table 4.3.1. A. Suggested Restoration Plant Species for Dry Meadow Habitats.

Herbaceous	Trees and Shrubs
alpine timothy, mountain brome, June grass small-winged sedge, white Dutch clover, California oatgrass	

Table 4.3.1. B. Suggested Restoration Plant Species for Wet Meadow Habitats.

Herbaceous	Trees and Shrubs
Beaked sedge, big-leafed sedge, water sedge, common rush, Baltic rush, thread rush, meadow foxtail, bluejoint reedgrass, bent redtop, big bluegrass	Douglas hawthorn, black cottonwood, pacific willow, thin-leaf alder

Table 4.3.1. C. Suggested Restoration Plant Species for Pond/Marsh Habitats.

Herbaceous	Trees and Shrubs
Beaked sedge, water sedge, big leafed sedge, cattails, common rush, dagger-leaf rush, hard stem bulrush, small-fruited bulrush	Red-osier dogwood, Drummond willow, Geyer willow

Table 4.3.1. D. Suggested Restoration Plant Species for Deciduous Shrub/Cottonwood Habitats.

Herbaceous	Trees and Shrubs
Common rush, Baltic rush, bent red-top, big bluegrass, timothy, meadow foxtail, white Dutch clover	Douglas hawthorn, thin-leaf alder, red-osier dogwood, pacific willow, serviceberry, black cottonwood, quaking aspen

Table 4.3.1. E. Suggested Restoration Plant Species for Mature Cottonwood Habitats.

Herbaceous	Trees and Shrubs
Common rush, Baltic rush, bent red-top, timothy, meadow foxtail, bent red-top, bog bluegrass, big bluegrass, white Dutch clover	Black cottonwood, Douglas hawthorn, red-osier dogwood, pacific willow, serviceberry

Table 4.3.1. F. Suggested Restoration Plant Species for Coniferous Forest Habitats.

Herbaceous	Trees and Shrubs
Pine grass, white Dutch clover, timothy, Annual fescue	Western red cedar, blue spruce, subalpine fir, snowberry, ocean spray, quaking aspen

Fencing

Cattle grazing can reduce or destroy vegetation and streambank integrity by removal and trampling of vegetation. Permanent fencing should be placed to prevent grazing cattle from reaching critical areas of post-mining restoration work. Temporarily restricting cattle use of restored sites will help to ensure rapid growth and establishment of riparian vegetation. Rapid restoration will decrease the time wildlife will spend displaced from the project sites. Proper grazing management following vegetation establishment will ensure healthy vegetative communities and proper riparian function.

Fencing should be designed so as not to restrict wildlife movement, assuring quality useable habitat.

Forest Buffer

Most wildlife species are sensitive to human or vehicle disturbance. A buffer of trees and shrubs established parallel to the highway, both on the north and south sides, would tend to reduce impact to wildlife from vehicle traffic. This buffer can be composed primarily of conifers with deciduous shrub species in the understory. Suitable species include lodgepole pine, Douglas fir, Engelmann spruce, for the overstory, and snowberry, ocean spray, ocean spray, and ninebark in the understory. In areas unsuitable to conifers due to excessive water, the buffer should be planted to deciduous trees. Black cottonwood and quaking aspen for the overstory, and red-osier dogwood, Douglas hawthorn, and thin-leaf alder in the understory.

Snags

Snags exist in adequate numbers adjacent to the river and within forested sites of the study area to support healthy populations of snag users such as woodpeckers and owls. Mature cottonwood sites within the study area also contain snags, which are host to several wildlife species. Snags are used by a host of wildlife species for nesting, denning, perching, and roosting. Incorporating snags and down logs into the restoration plan will replace habitat lost during mining operations. Twenty-three species of wildlife having the potential to use the area were mentioned previously (Table 2.3.1.B.) that use holes excavated by others for reproducing and having young.

Thomas (1979) recommends a rate of 2.25 snags per acre to meet habitat requirements of 100% maximum potential population level of cavity nesters, especially woodpeckers. One snag per acre results in 40% potential population level. Snag replacements should be as large as possible and Thomas (1979) suggests that a range of diameters is desirable, with a minimum size at 10 inches DBH and 93% of all snag replacements exceeding 12 inches DBH. At least 6% of total snags should exceed 20 inches DBH.

Table 4.3.1. Recommended snag size and number to achieve a desired percent population level of snag users, per Thomas (1979).

	PERCENT MAXIMUM POTENTIAL POPULATION LEVEL				
Snag Size (DBH)	100%	80%	60%	40%	20%
≥ 20 inches	.14	.11	.08	.05	.03
≥ 12 inches	1.36	1.09	.82	.55	.27
≥ 10 inches	.75	.60	.45	.30	.15
Total Snags / Acre	2.25	1.80	1.35	.90	.45

When possible, existing snags should be retained within the study areas, otherwise, snags will need to be selected and then "planted" or buried upright within the restored area. Species selected for snag retention or replacement in order of preference are: cottonwood, aspen, western larch, ponderosa pine, western red cedar, Douglas fir, grand fir, western hemlock, lodgepole pine, and Engelmann spruce. A mix of species will diversify use and retention time. Snag height should be a minimum of 20 feet and snags should be planted at a depth relative to height, diameter, and substrate conditions. This depth is typically one-quarter to one-third snag height. Providing a firm foundation when "planting" is critical to protect the snag from wind throw and tipping in soft or inundated soils. Clumping the snags in small groups seems to enhance nesting habitat for certain species such as the pileated woodpecker (Thomas, 1979).

Whenever possible, leave trees should remain as recruitment snags. Considering mining techniques however, the feasibility to maintain any quantity of leave trees is low. Also, the life-span of "planted" snags is not known, and will likely be less than snags which would normally be left in forest management situations. For this reason, we recommend that snag numbers at 1-2 per acre as recommended by Thomas (1979). In addition, we recommend that a variety of nesting boxes ranging from wren to wood duck size be installed at a rate of 2-3 per acre throughout the restored project sites. These nest boxes should be of good quality construction and be installed on a variety of fence post-type structures ranging from 5-20 feet above ground level.

Downed logs will also be distributed throughout the restored sites for wildlife use. Down logs are naturally provided by fallen trees, and in riparian areas as drift wood. The number

of downed logs should be twice the suggested minimum for snags, following the same guidelines for species, length, and diameters as for snags. If possible, distribution of snags and downed logs should avoid areas within 200 feet of power poles, roads, and project area boundaries.

Oxbows

Many oxbows, remnant, and abandoned channels cut off in the meandering process of the St. Maries River are present within the study area. These oxbows provide various wildlife habitats and make up the pond/marsh habitat within the study area. Variations in the oxbows can be attributed to time of abandonment. As oxbows age, they accumulate sediments, decreasing their water depths and time of inundation. Differences in water depths and inundation times provide sites for different plant communities. These varying communities provide a variety of wildlife habitats. Oxbows also act as storage reservoirs during high water events helping to dissipate stream energy.

Oxbows will be recreated in the restoration process. A variety of shapes, depths, and sizes will be incorporated in order to provide the diverse habitats of pre-mining conditions.

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APPENDIX A

1) Copy of letter-of-response from Idaho Conservation Data Center (9/28/98) from a request for information on species of special concern located in the study area.

2) Copy of letter-of-response from Idaho Conservation Data Center (1/28/99) from a request for information on known Coeur d'Alene Salamander occurrences near the study area.

3) Copy of a letter-of-response from United States Fish and Wildlife Service (11/10/98) from a request for information on endangered, threatened, proposed, and candidate species and species of special concern that may be present in the study area.

IDAHO CONSERVATION DATA CENTER

Idaho Department of Fish and Game • 600 South Walnut • P.O. Box 25 Boise, Idaho 83707 • (208) 334-3402 • FAX 334-2114

28 September 1998

Kurt Dostal
Wildlife Habitat Institute
1025 East Hatter Creek Rd.
Princeton, ID 83857

Dear Mr. Dostal:

I am responding to your request for information on special status species associated with T43N R1E S5,8,9,15,16 along the St. Maries River. Following is a species list.

Animals

bull trout (LT) - St. Maries River.
westslope cutthroat trout (SC) - St. Maries River.

Plants

Tauschia tenuissima (Leiberg's Tauschia) - BLM Watch species; located in and adjacent to the project sections.
Carex hendersonii (Henderson's sedge) - BLM and USFS Sensitive species; located ca 3 miles SE of the project area.

LT = Listed Threatened SC = USFWS Species of Concern

If you have questions regarding this response, please contact me.

Sincerely,

George Stephens
Fish and Game Data Coordinator

Please note: The quantity and quality of data collected by the Idaho Conservation Data Center (CDC) are dependent on the research and observations of many individuals and organizations. In most cases, these data are not the result of comprehensive or site-specific field surveys; many natural areas in Idaho have never been thoroughly surveyed. For these reasons, the CDC cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Idaho. CDC reports summarize the existing information known to the CDC at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

IDAHO CONSERVATION DATA CENTER

Idaho Department of Fish and Game • 600 South Walnut • P.O. Box 25, Boise, Idaho 83707 • (208) 334-3402 • FAX 334-2114

January 28, 1999

Kurt Dostal
Wildlife Habitat Institute
1025 E. Hatter Creek Road
Princeton, ID 83857

Dear Mr. Dostal:

I am responding to your request for any known Coeur d'Alene salamander occurrences near T43N R1E, Sections 5, 8, 9, 15, and 16. There is one known occurrence about 4 miles SW of the area indicated in your request. A copy of the record from our database is enclosed.

If you have any questions regarding this request, please feel free to contact me.

Sincerely,

Stephanie Mitchell

Stephanie Mitchell
Information Management Technician

Idaho Conservation Data Center
Idaho Department of Fish and Game
January 28, 1999
For: Wildlife Habitat Institute

Coeur d'Alene Salamander

Record No. 064
Scientific Name: PLETHODON IDAHOENSIS
Common Name: COEUR D'ALENE SALAMANDER
Federal Status: W
State Status: SC
Type of Occurrence: BREEDING POPULATION
First Observed (date): 1989
Last Observed (date): 1989-04-28

Township	Range	Section(s)	Comments on section(s)
043N.....	001E...	31.....	SE4SE4

Latitude: 470122N Longitude: 1161456W
County: Shoshone
Quad Name: MERRY CREEK
Place Name: CLARKIA
Elevation (ft)
  minimum: 2860 maximum:
Location:
  Ca 1 mi due N of Clarkia on unnamed road.
Managed Area(s):
  IDAHO PANHANDLE NATIONAL FORESTS
  IDAHO PANHANDLE NATIONAL FORESTS, ST. MARIES RANGER DISTRICT
Land Ownership:
  St. Joe NF, St. Maries RD, and/or private land.
Habitat:
  Seepage of light, dripping flow on E side of road, ca 50 ft above creek to west. Discontinuous wet
  area during visit. Scant overstory.
Occurrence Data:
  1989: salamanders found beneath Belt rock rubble.
Comments on protection:

Comments:
  Site visited again in late June, 1989. No salamanders found; site was mostly dry.
Specimens:

Best Source or Contact:
  Wilson, Al

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Upper Columbia River Basin Field Office
11103 E. Montgomery Drive, Suite 2
Spokane, WA 99206

November 10, 1998

Kurt Dostal
Wildlife Habitat Institute
Rt. 1, Box 102-A
Princeton, ID 83857

Subject: Threatened and Endangered Species List for Emerald Creek Garnet Company Project (1-9-99-SP-19; 970.0500)

Dear Mr. Dostal:

This responds to your recent request for the subject species list. The Emerald Creek Garnet Company is proposing a mining project, located within Township 43 North, Range 1 East, Sections 5, 8, 9, 15, and 16, near Fernwood, Idaho. We have enclosed a list 1-9-99-SP-19 (Enclosure A) of endangered, threatened, proposed, and candidate species and species of concern that may be present in the proposed project area. The list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act of 1973 (Act), as amended. The requirements for Federal agency compliance under the Act are outlined in Enclosure B. Please reference the species list number on Enclosure A in all subsequent correspondence, reports, environmental assessments, environmental impact statements, biological assessments (evaluations), Coordination Act reports, etc.

If a listed species appears on Enclosure A, preparation of a biological assessment/evaluation (BA) would be prudent. Even if a BA is not prepared, potential project effects on listed species should be addressed in the environmental documentation for this project. If a BA is not commenced within 90 days of this response, verification of the accuracy of the species list request is required by regulations. Should the BA determine that a listed species is likely to be affected adversely by the project, the lead Federal agency (if any) involved in this project should request formal section 7 consultation through this office. If a proposed species is likely to be jeopardized by a Federal action, regulations require a conference between the Federal agency and the Service.

Candidate species and species of concern that appear on Enclosure A have no protection under the Act, but are included for early planning consideration. Proposed species could be formally listed and candidate species could be formally proposed and listed during project planning, thereby falling within the scope of section 7 of the Endangered Species Act. Therefore, if they appear on Enclosure A, we recommend that additional surveys be made for proposed and/or candidate species that are likely to be in the project area. If the project is likely to adversely impact a candidate species, informal consultation with this office is recommended.

The Service recently received a petition to list the westslope cutthroat trout as theatened. Petitioned species receive no protection under the Act. However, a petition is an early step in the listing process. In its 90-day finding, published in the June 10, 1998 Federal Register (63 FR 31691), the Service found that the petition presented substantial information that listing this species may be warranted. The Service is now surveying the status of the species range-wide, preparatory to making a 12-month finding, due January 25, 1999. You may want to consider the potential effects of the subject project on this species, both to minimize any adverse effect to the species and to simplify consultation responsibilities should the species be proposed or listed before the project is completed.

If you have any questions regarding Federal consultation responsibilities under the Act, please contact Suzanne Audet of this office at (509) 891-6839. Thank you for your continued interest in the Endangered Species Program.

Sincerely,

Philip Daumeyer
Field Supervisor

Enclosures

cc: IDFG, Reg. 1, CdA

Comments:

1. There are species regulations defining the protection and management of gray wolves designated as nonessential experimental, as outlined in the final rules published in the Federal Register, Vol. 59, No. 223 - November 22, 1994. These regulations include special provisions regarding "take" of gray wolves. For section 7 interagency coordination purposes, wolves designated as nonessential experimental that are not within units of the National Park System or National Wildlife Refuge System are treated as proposed species. As such, Federal agencies are only required to confer with the Service when they determine that an action they authorize, fund, or carry out "is likely to jeopardize the continued existence" of the species.

2. The U.S. Fish and Wildlife Service has been petitioned to list the westslope cutthroat trout as threatened. Petitioned species receive no protection under the Endangered Species Act. However, a petition is an early step in the listing process. The Service has made a positive 90-day finding, published June 10, 1998, in the Federal Register (63 FR 31691), that the petition presented substantial information that listing this species may be warranted. The Service is now surveying the status of the species range-wide, preparatory to making a 12-month finding, due January 25, 1999.

Enclosure A

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES
AND CANDIDATE SPECIES THAT MAY OCCUR WITHIN THE
AREA OF THE EMERALD CREEK GARNET COMPANY PROJECT
FWS-1-9-99-SP-19

LISTED SPECIES	COMMENTS
Gray Wolf (XN) (Canis lupus)	See Comment 1.
Bull Trout (LT) (Salvelinus confluentus)	
Ute ladies'-tresses (LT) (Spiranthes diluvialis)	

PROPOSED SPECIES

None

CANDIDATE SPECIES

None

SPECIES OF CONCERN

Westslope cutthroat trout* (Oncorhynchus clarki lewisi)	See Comment 2.

ENCLOSURE B

FEDERAL AGENCIES' RESPONSIBILITY UNDER SECTIONS 7(a) AND (c) OF THE ENDANGERED SPECIES ACT

SECTION 7(a) - Consultation/Conference

Requires: 1) Federal agencies to utilize their authorities to carry out programs to conserve endangered and threatened species;

3) Consultation with FWS when a Federal action may affect a listed endangered or threatened species to insure that any action authorized, funded or carried out by a Federal agency is not likely to jeopardize the continued existence of listed species; or result in destruction or adverse modification of critical habitat. The process is initiated by the Federal agency after determining the action may affect a listed species; and

3) Conference with FWS when a Federal action is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat.

SECTION 7(c) - Biological Assessment for Major Construction Activities [1/]

Requires Federal agencies or their designees to prepare Biological Assessment (BA) for major construction activities. The BA analyzes the effects of the action[2/] on listed and proposed species. The process begins with a Federal agency in requesting from FWS a list of proposed and listed threatened and endangered species (list attached). If the BA is not initiated within 90 days of receipt of the species list, the accuracy of the species list should be informally verified with our Service. The BA should be completed within 180 days after its initiation (or within such a time period as is mutually agreeable). No irreversible commitment of resources is to be made during the BA process which would foreclose reasonable and prudent alternatives to protect endangered species. Planning, design, and administrative actions may be taken; however, no construction may begin.

We recommend the following for inclusion in the BA; an onsite inspection of the area to be affected by the proposal which may include a detailed survey of the area to determine if the species are present; a review of literature and scientific data to determine species' distribution, habitat needs, and other biological requirements; interviews with experts, including those within FWS, State conservation departments, universities and others who may have data not yet published in scientific literature; an analysis of the effects of the proposal on the species in terms of individuals and populations, including consideration of cumulative effects of the proposal on the species and its habitat; an analysis of alternative actions considered. The BA should document the results, including a discussion of study methods used, any problems encountered, and other relevant information. The BA should conclude whether or not a listed or proposed species will be affected. Upon completion, the BA should be forwarded to our office.

[1/] A major construction activity is a construction project (or other undertaking having similar physical impacts) which is a major action significantly affecting the quality of human environment as referred to in the NEPA (42 U.S.C. 4332 (2)(c).

[2/] "Effects of the action" refers to the direct and indirect effects on an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action.